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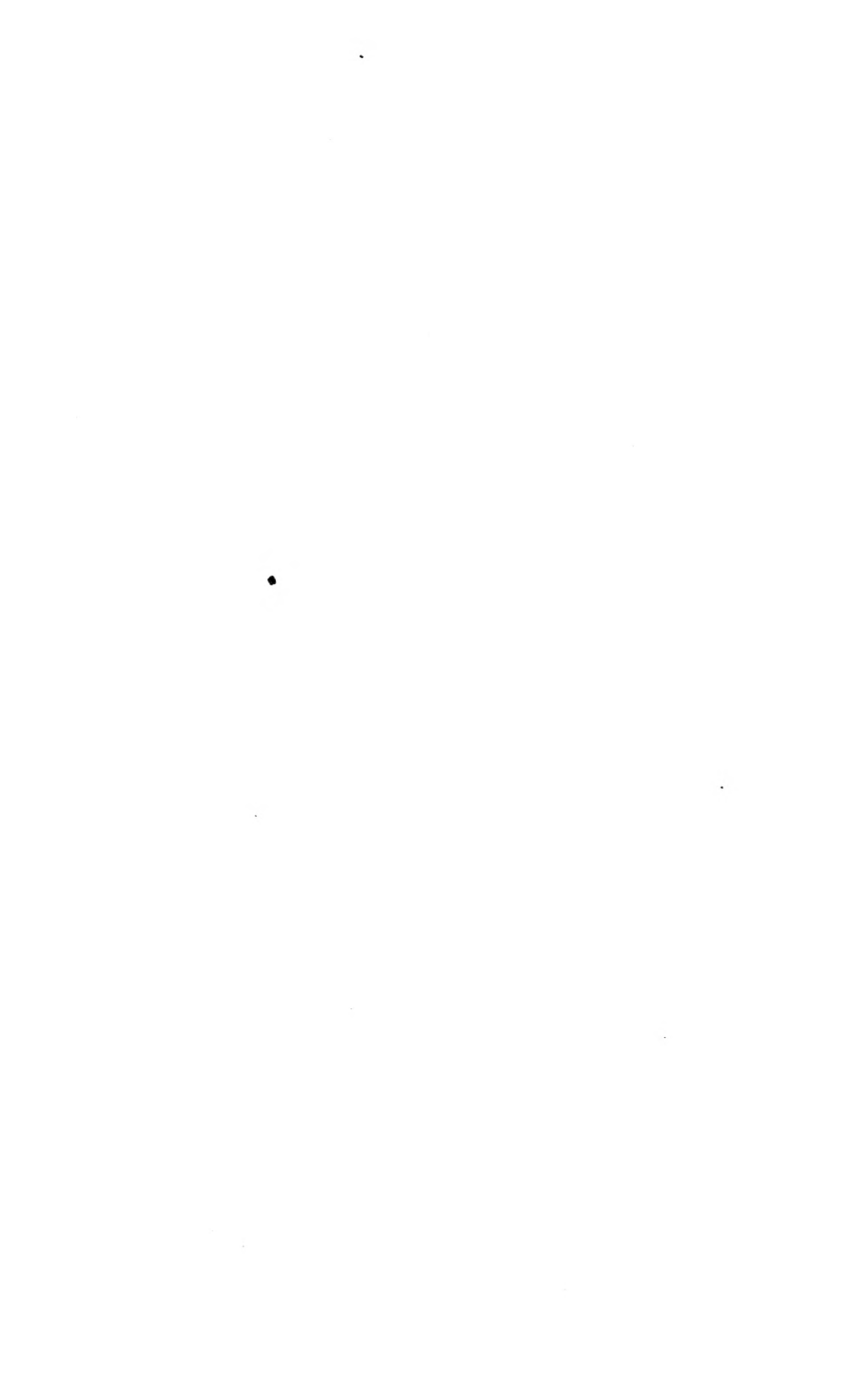
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SMITHSONIAN

MISCELLANEOUS COLLECTIONS.

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VOL. XXXII.

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"EVERY MAN IS A VALUABLE MEMBER OF SOCIETY WHO BY HIS OBSERVATIONS, RESEARCHES,  
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1888.



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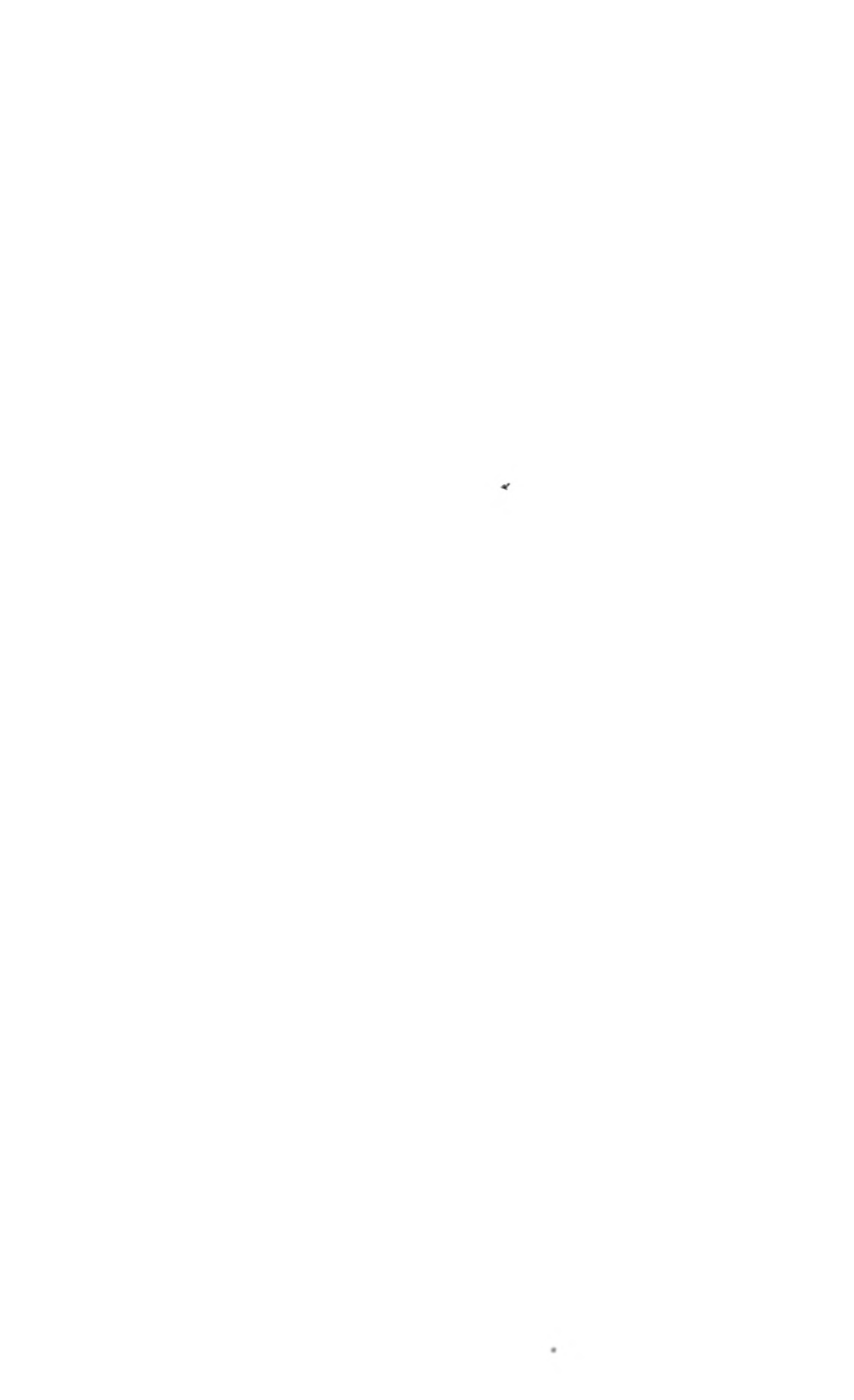
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S. P. LANGLEY,

*Secretary S. I.*



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GLESWORTH CLARKE. 1888. Pp. 420.
- ARTICLE II. (No. 658.) INDEX TO THE LITERATURE OF THE SPEC-  
TROSCOPE. By ALFRED TUCKERMAN. 1888. Pp. 433.



SMITHSONIAN MISCELLANEOUS COLLECTIONS.

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659

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# THE CONSTANTS OF NATURE.

## PART I.

### A TABLE OF SPECIFIC GRAVITY FOR SOLIDS AND LIQUIDS.

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[NEW EDITION. REVISED AND ENLARGED.]

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BY

FRANK WIGGLESWORTH CLARKE,

*Chief Chemist U. S. Geological Survey.*



WASHINGTON :  
PUBLISHED BY THE SMITHSONIAN INSTITUTION.  
1888.

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JUDD & LETWEILER,

AT WASHINGTON, D. C.

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## INTRODUCTION.

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Early in 1872 I submitted to the Secretary of the Smithsonian Institution, the late Joseph Henry, a manuscript entitled "A Table of Specific Gravities, Boiling Points, and Melting Points for Solids and Liquids." It was accepted for publication, and in February, 1874, the printed copies were ready for distribution. For years previously Professor Henry had had in mind the publication of a series of similar tables somewhat upon the plan long before suggested by Babbage, and accordingly my modest work was given the somewhat ambitious title of "The Constants of Nature" and made the first part of the proposed undertaking. Subsequently Parts II, III, and V were furnished by myself and Part IV by Professor G. F. Becker, and in 1876 I also published a supplement to Part I.

The following tables form, in effect, a new edition of Part I, completely revised, rearranged, and brought down as nearly as possible to the date of printing. They are, however, modified by the omission of boiling and melting points, except when such data seemed essential to the proper identification of a compound, on the ground that the magnificent tables of Professor Carnelley already supply that want. I have limited myself to specific gravity alone, following in the main the plan of arrangement adopted in my earlier work, with such changes as were made necessary by the later developements of chemical thought. Constitutional formulæ have been used, not according to any fixed rule, but according to convenience, and their adoption has been governed, to some extent, by the limitations of the octavo page. All other details have been subject to the same limitations, and it is hoped that their absence will be compensated for by the almost uniformly full references to literature. Some data could not be traced back to their original sources, at least not without unwarrantable labor, and most of these formed part of an early table prepared nearly twenty years ago for my own private use. A few determinations are accredited to standard works of reference, such as Watts' Dictionary, Dana's Mineralogy, and the like, and many have been drawn from the *Jahresbericht*. Absolute completeness cannot, of course, be claimed, and in some directions it has not

even been attempted. Among minerals, only those having approximately definite formulæ are given, and indefinite substances have been excluded altogether. The tables aim at reasonable completeness only as regards *artificial substances of definite constitution*, and all else is gratuitous. A good many determinations of specific gravity have been unearthed from doctoral dissertations, school programmes, and similar foes of the bibliographer, and doubtless other data so printed have escaped my notice altogether. There is a weakness of human nature which, masquerading as patriotism, sometimes leads men of science to bury valuable researches in obscure local publications, and a compiler may never flatter himself that no such paper has eluded his vigilance. I shall be glad to receive notice of all omissions, and will try to rectify such or other errors in future supplements or appendices.

A word in conclusion as to the extent of the table. They contain the specific gravities of 5,227 distinct substances and 14,465 separate determinations. The original edition gave only 2,263 substances, to which nearly 700 were added in the supplement. The increase is a noteworthy indication of existing chemical activity.

F. W. CLARKE.

WASHINGTON, *June* 20, 1888.

## EXPLANATORY NOTES.

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In references to literature the following abbreviations have been used. In each case, as far as practicable, series, volume, and page are indicated, the page reference signifying, according to circumstances, either the first page of the paper cited, or else the actual page upon which the determination is given. The former rule applies to pages containing many data; the latter to cases in which the specific gravity datum is merely incidental.

---

A. C. J.—American Chemical Journal.

A. C. P.—Annalen der Chemie und Pharmacie.

A. J. S.—American Journal of Science.

Am. Chem.—American Chemist.

Am. J. P.—American Journal of Pharmacy.

Am. Phil. Soc.—American Philosophical Society.

Ann.—Annales de Chimie et de Physique.

Ann. Phil.—Annals of Philosophy.

Arch. Pharm.—Archiv für Pharmacie.

B. D. Z.—Die Beziehungen zwischen Dichte und Zusammensetzung bei festen und liquiden Stoffen. Leipzig, 1860.

Bei.—Beiblätter zu den Annalen der Physik und Chemie.

Ber.—Berichte der Deutschen Chemischen Gesellschaft.

B. H. Ztg.—Berg-und hüttenmännische Zeitung.

B. J.—Berzelius' Jahresbericht.

Böttger.—Tabellarische Uebersicht der specifischen Gewichte der Körper. Frankfurt, 1837.

B. S. C.—Bulletin de la Société Chimique.

B. S. M.—Bulletin de la Société Française de Mineralogie.

Bull. Acad. Belg.—Bulletins, Académie Royale de Belgique.

Bull. Geol.—Bulletin de la Société Géologique.

Bull. Heb.—Bulletin Hebdomadaire de l'Association Scientifique de France.

Bull. U. S. G. S.—Bulletin of the U. S. Geological Survey.

C. C.—Chemisches Centralblatt.

C. G.—Chemical Gazette.

C. N.—Chemical News.

C. R.—Comptes Rendus.

D. J.—Dingler's Polytechnisches Journal.

Dm.—Schröder's "Dichtigkeitsmessungen." Heidelberg, 1873.

Erd. J.—Erdmann's Journal.

F. W. C.—This abbreviation indicates the work of students under the direction of F. W. Clarke.

G. C. I.—Gazzetta Chimica Italiana.

Geol. Mag.—Geological Magazine.

G. F. F.—Geologiska Föreningar Förhandlingar.

Gilb. Ann.—Gilbert's Annalen.

Gm. H.—Gmelin's Handbook of Chemistry. Cavendish Society edition.

In. Diss. or Inaug. Diss.—Inaugural or Doctoral Dissertation. Always prefixed by the name of the university from which the dissertation was published.

J.—Jahresbericht über die Fortschritte der Chemie.

J. A. C.—Journal of Analytical Chemistry.

J. C. S.—Journal of the Chemical Society.

J. P. C.—Journal für Praktische Chemie.

J. Ph. Ch.—Journal de Pharmacie et de Chimie.

J. R. C.—Jahresbericht über die Fortschritte \* \* \* der reinen Chemie.

M. C.—Monatshefte für Chemie.

M. C. S.—Memoirs of the Chemical Society.

Mem. Acad. Belg.—Mémoires, Académie Royale de Belgique.

Min. Mag.—Mineralogical Magazine.

M. P. M.—Mineralogische Petrographische Mittheilungen.

M. St. P. Sav. Et.—Mémoires de Savants Etrangers, St. Petersburg Academy.

N. J.—Neues Jahrbuch für Mineralogie, etc.

Nich. J.—Nicholson's Journal.

Öf. Ak. St.—Öfversigt af K. Vet. Akad. Förhandlingar, Stockholm.

P. A.—Poggendorff's Annalen. For convenience, the second series under Wiedemann is covered by the same abbreviation.

P. des C.—Pesanteur Spécifique des Corps. Brissot, Paris, 1787. A German edition by Blumhof appeared at Leipzig in 1795.

P. M.—Philosophical Magazine. London, Edinburgh, and Dublin.

Proc. Amer. Acad.—Proceedings of the American Academy, Boston.

Proc. Amer. Asso.—Proceedings of the American Association for the Advancement of Science.

P. R. S.—Proceedings of the Royal Society. London.

P. R. S. E.—Proceedings of the Royal Society. Edinburgh.

P. R. S. G.—Proceedings of the Royal Society. Glasgow.

P. T.—Philosophical Transactions.

Q. J. S.—Quarterly Journal of Science.

R. T. C.—Recueil des Travaux Chimiques.

Schw. J.—Schweigger's Journal.

S. W. A.—Sitzungsberichte der K. K. Akademie der Wissenschaften. **Wien.**

Thurston's Report.—Report of the Board on Testing Iron, Steel, and other Metals.  
**Washington, 1881.**

U. N. A.—Upsala, Nova Acta.

V. H. V.—Verhandlungen des naturhistorisches Vereines. **Bonn.**

Watts' Dict.—Watts' Dictionary of Chemistry.

Z. A. C.—Zeitschrift für analytische Chemie.

Z. C.—Zeitschrift für Chemie.

Z. G. S.—Zeitschrift der Deutschen Geologischen Gesellschaft.

Z. K. M.—Zeitschrift für Krystallographie und Mineralogie.



# A TABLE OF SPECIFIC GRAVITIES

## FOR SOLIDS AND LIQUIDS.

### I. THE ELEMENTS.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Hydrogen. Liquefied	.025 } 0° -----	Cailletet and Hautefeuille. C. R. 92, 1086.
" " "	.026 } -----	
" " "	.032 } -----	
" " "	.033 } -----	Dewar. P. M. (4), 47, 334.
" (Occluded by palladium.)	.620 to .623 -----	
Lithium	.578 } -----	Bunsen. J. 8, 324.
"	.589 } -----	
Sodium	.9348 -----	Davy. P. T. 1808, 21.
"	.97223, 15° -----	Gay Lussac and Thénard. See Böttger.
"	.985 -----	Schröder. J. 12, 12.
"	.97 -----	Troost and Hautefeuille. C. R. 78, 970.
"	.9743, 10° } -----	Baumhauer. Ber. 6, 655.
"	.9735, 13°.5 } -----	
"	.972 -----	Quincke. P. A. 135, 642.
"	.7414, at boiling point. -----	Ramsay. Ber. 13, 2145.
"	.9725, 0° -----	Hagen. P. A. (2), 19, 436.
"	.9686, 16°.9, m. of 3 } -----	
"	.9287, 97°.6, fused } -----	
Potassium	.865, 15° -----	Gay Lussac and Thénard. Ann. 66, 205.
"	.874 -----	Sementini. See Böttger.
"	.8427, fused -----	Playfair and Joule. M. C. S. 3, 76.
"	.8750, 13° } -----	Baumhauer. Ber. 6, 655.
"	.8766, 18° } -----	
"	.8642, 0° -----	Hagen. P. A. (2), 19, 436.
"	.8298, 62°.1, fused } -----	
Rubidium	1.52 -----	Bunsen. J. 16, 185.
Cæsium	1.872 } -----	Setterberg. A. C. P. 211, 215.
"	1.884 } 15° -----	
"	1.886 } -----	
Glucinum	2.1 -----	Debray. J. 7, 536. [384.
"	1.64 (Cor. for impurities). -----	Nilson and Petterson. Ber. 11,
"	1.85, 20° -----	Humpidge. P. R. S. 39, 1.
Magnesium	2.24, m. of 2 -----	Playfair and Joule. M. C. S. 3, 73.
"	1.7430, 5° -----	Bunsen. J. 5, 363.
"	1.69 } -----	Kopp.
"	1.71 } 17° -----	
"	1.75 -----	Deville and Caron. J. 10, 148.
"	1.77, 0° -----	H. Wurtz. Am. Chem., Mar. 1876.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Zinc.....	6.861	Brissou. P. des C.
".....	6.862	Berzelius. See Bottger.
".....	6.9154	Karsten. Schw. J. 65, 394.
".....	6.939, m. of 3	Playfair and Joule. M. C. S. 3, 67.
".....	7.06 to 7.20	Bolley. J. 8, 387.
".....	6.9664	Schiff. A. C. P. 107, 59.
".....	6.9754	
".....	7.21	Daniell.
".....	7.146	Wertheim.
".....	6.865	Mallet. D. J. 85, 378. [817
".....	7.2	Roberts and Wrightson. Bel. 5.
" Ordinary	7.18126	Kali-scher. Ber. 14, 2750.
" Crystalline	7.1844	
" Fused	6.512, m. of 3	Playfair and Joule. M. C. S. 3, 79.
" ".....	6.484	Roberts and Wrightson. Ann. 15,
" ".....	6.554 Two methods	
" ".....	6.554	30, 181.
" ".....	6.900	Quincke. P. A. 135, 642
" Solid	7.119, 0	
" Not pressed	7.142, 16	Spring. Ber. 16, 2724.
" Once "	7.153, 16	
" Twice "	7.150, 16	
" ".....	8.6040	
Cadmium. Cast	8.6944	Stromeyer. Schw. J. 22, 365.
" Hammered	8.670	Children. See Bottger.
".....	8.650	Heraclith. P. M. 64, 1824, 321.
".....	8.6955	Karsten. Schw. J. 65, 394.
" Wire	8.6689	Baudrimont. J. P. C. 7, 278.
" Pure	8.540	Schroder. P. A. 107, 113.
" ".....	8.566	
" ".....	8.667	
" ".....	8.648	
" Commercial	8.655, 11	Matthiessen. J. 13, 112.
".....	8.627, 0	Quincke. P. A. 135, 642.
".....	8.394	
" Fused	8.642, 17	Spring. Ber. 16, 2724.
" Not pressed	8.667, 16	
" Once "	8.667, 16	
" Twice "	8.6681, 0	
".....	8.665, 318, solid	Vicentini and Omolei. Bel. 11,
".....	7.989, 318, molten	
Mercury. Solid	14.394	769.
" ".....	14.333, — 40	Schulze.
" ".....	15.745	Hallstrom. Gills Ann. 20, 403.
" ".....	14.485, — 60	Biddle. P. M. 30, 153.
" ".....	14.0, about	Kupffer and Cavallo.
" ".....	15.19	Joule. J. 16, 283.
" ".....	14.1932	Mallet. J. C. S. 34, 279.
" ".....	14.5681	Brissou. P. des C.
" Liquid	14.575	Fahrenheit. See Bottger.
" ".....	14.550	Muschenbroek. " " "
" ".....	14.568, 15.5	Crichton. P. M. 16, 48.
" ".....	14.643, 10	Biddle. P. M. 30, 152.
" ".....	14.078, 0	Hallstrom. Gills Ann. 20, 397
" ".....	12.810, boiling	
" ".....	13.586	Scholz. See Bottger.
" ".....	13.567	Kummer. " " "
" ".....	13.5886, 4	Kupffer. Ann. 12, 40, 285.
" ".....	13.535, 26	

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Mercury. Liquid -----	13.588597 -----	Biot and Arago. Biot's "Traité de Physique."
" " -----	13.5592 -----	Karsten. Schw. J. 65, 394.
" " -----	13.582, 5°—10° -----	Regnault. P. A. 62, 50.
" " -----	13.570, 10°—15° -----	
" " -----	13.558, 15°—20° -----	
" " -----	13.59599 -----	Regnault. Ann. (3), 14, 236.
" " -----	13.59602 -----	
" " -----	13.59578 -----	
" " -----	13.595, 0° -----	Kopp. J. 1, 445.
" " -----	13.573, 15° -----	Holzmann. J. 13, 112.
" " -----	13.603, 12° -----	Schiff.
" " -----	13.584, 16°.6 -----	Stewart. P. T. 1863, 430.
" " -----	13.5953, 0° -----	Volkmann. Ber. 14, 1708.
Calcium -----	1.566 -----	Matthiessen. J. 8, 324.
" -----	1.584 -----	
" -----	1.584 -----	
" -----	1.55 -----	Liés-Bodart and Jobin. J. 11,
" -----	1.6 to 1.8 -----	Caron. J. 13, 119.
Strontium -----	2.504 -----	Matthiessen. J. 8, 324.
" -----	2.580 -----	
" -----	2.4 -----	
Barium -----	4.00, about -----	Franz. J. P. C. 107, 253.
" -----	3.75 -----	Clarke. Gilb. Ann. 55, 28.
Boron.* Cryst. -----	2.68 -----	Kern. C. N. 31, 243. [52, 63.
" Al B <sub>12</sub> -----	2.5345, 17°.2, m. of 2 -----	Wöhler and Deville. Ann. (3),
" C <sub>2</sub> Al <sub>3</sub> B <sub>13</sub> -----	2.618, 13° -----	
" " -----	2.611, 20° -----	
Aluminum. Cast -----	2.50 -----	Hampe. A. C. P. 183, 85 and 96.
" Hammered -----	2.67 -----	
" -----	2.583, 4° -----	
" -----	2.688 -----	Wöhler. J. 7, 327.
" Com'l wire -----	2.8067 -----	Mallet. P. T. 1880, 1025.
" " foil -----	2.8075 -----	Barlow. J. C. S. April, 1883.
Gallium -----	5.935, 23° -----	A. P. Corbit. } Communicated
" -----	5.956, 24°.45 -----	W. Bishop. } by R. B. Warder.
Indium. In grains -----	7.110 -----	Boisbaudran. C. R. 83, 611.
" " -----	7.147 -----	
" Lamine -----	7.277 -----	
" -----	7.362, 15° -----	Reich and Richter. J. 17, 241.
" -----	7.421, 16°.8 -----	
Lanthanum -----	6.049 -----	
" -----	6.163 -----	Winkler. J. 18, 233.
Cerium -----	6.628 -----	" J. 20, 262.
" After fusion -----	6.728 -----	Hillebrand and Norton. P. A.
Didymium -----	6.544 -----	156, 473.
Thallium -----	11.862 -----	Hillebrand and Norton. P. A.
" Wire -----	11.808 -----	156, 474.
" Cast -----	11.853 -----	Lamy. J. 15, 180.
" -----	11.777 -----	De la Rive. J. 16, 248.
" -----	11.900 -----	Werther. J. 17, 247.
" Cast -----	11.81 -----	
" Pressed -----	11.88 -----	
" Wire -----	11.91 -----	Crookes. J. C. S. 1864, 112.

\* According to Hampe, the so-called "crystallized boron" is never pure. Its composition is shown in the formulæ given above.

NAME.		SPECIFIC GRAVITY.	AUTHORITY.	
Carbon.	Diamond	3.550	Brissou. P. des C.	
"	"	3.492	Grailich. Bull. Geol. (2), 13, 542.	
"	"	3.520	Mohs. Min. 2, 309.	
"	"	3.534	Shepard.	
"	"	3.5	Berzelius. A. C. P. 49, 247.	
"	"	3.55	Pelouze. Watts' Dict.	
"	"	3.5295	Thomson. Min. 1, 46.	
"	"	3.53	Schafarik. P. A. 139, 188.	
"	"	3.51432, 18. A.	Schrotter. J. 24, 257.	
"	"	3.5143	Schrauf. J. 24, 257.	
"	"	3.529, 15	Dufrenoy. J. 24, 258.	
"	"	3.51835, m. of 5	Baunhauer. J. C. S. 32, 849.	
"	Graphite	2.144	Breithaupt. See Bottger.	
"	"	2.229	Kenngott. S. W. A. 13, 469.	
"	"	2.273	Regnault. Gm. H.	
"	"	2.14	Fuchs. J. P. C. 7, 353.	
"	"	2.5	Berzelius. A. C. P. 49, 247.	
"	"	2.3285	Karsten. Schw. J. 65, 394.	
"	"	2.3162	Poggendorf. P. A. Erganz. Bd. 1848, 363.	
"	"	2.254	Purified	Brodie. J. 12, 68.
"	"	2.264		
"	"	2.1054		
"	"	2.5854		
"	"	1.8024	20, purified	Lowe. J. 8, 297.
"	"	1.8144		
"	Gas carbon	2.35	Graham.	
"	"	2.08	Baudrimont.	
"	"	1.885	Mené. J. 20, 972.	
"	"	1.723, 1.821, 1.9824	From different parts of the retort.	
"	"	2.056, 2.556, 18	Meyn. J. P. C. 23, 482.	
"	Sugarcharcoal	1.814	Monier. Bull. Heb. 11, 13.	
"	"	1.854		
"	Charcoal	1.76	Colquhoun.	
"	"	2.10 from alcohol	Scholz. See Bottger.	
"	"	1.84	Griffith. " " [4, 241.	
"	"	1.80	Playfair. Proc. Roy. Soc. Edin.	
"	Lamp-black	1.78	Baudrimont.	
"	"	1.723 from kerosene	Hallock. Bull. 12, U. S. G. S.	
"	"	1.780 from coal-tar		
"	"	1.752 from natural g.		
"	"	1.773 from dead oil		
Silicon.	Graphitoidal	2.49, 10	Wohler. J. 9, 347.	
"	"	2.463	Harmening. P. A. 97, 187.	
"	"	2.0044	Winkler. J. 17, 208, 209.	
"	"	2.194		
"	"	2.197		
"	"	2.337	Miller. Proc. Roy. Soc. Edin. 4, 241.	
"	Adamantine	2.48, m. of 6	Playfair. Proc. Roy. Soc. Edin. 4, 241.	
Germanium		5.469, 207.4	Winkler. J. P. C. (2), 34, 201.	
Zirconium		4.15	Troost. J. 18, 183.	
Tin		7.291	Brissou. P. des C.	
"		7.295	Muschenbrock. See Böttger.	

\* The extremes of 20 determinations made on specimens from different localities.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Tin -----	7.2914 -----	Guyton. Nich. J. (1), 1, 110.
" -----	7.278, 15°.5 -----	Crichton. P. M. 16, 48.
" -----	7.2911, 17° -----	Kupffer. Ann. (2), 40, 285.
" -----	7.285 -----	Herapath. P. M. 64, 321.
" -----	7.600 -----	
" -----	7.5565 -----	
" -----	7.2905 -----	Karsten. Schw. J. 65, 394.
" Wire -----	7.3395 -----	Baudrimont. J. P. C. 7, 278.
" -----	7.306, m. of 4 -----	Playfair and Joule. M. C. S. 3, 68.
" Crystallized -----	7.178 -----	W. H. Miller. P. M. (3), 22, 263.
" Cast -----	7.293 -----	
" -----	7.3043 -----	Kopp. A. C. P. 93, 129.
" Cooled slowly -----	7.373 -----	St. Claire Deville. P. M. (4), 11, 144.
" " quickly -----	7.239 -----	
" -----	7.294, 13° -----	Matthiessen. J. 13, 112.
" -----	7.291 -----	Mallet. D. J. 85, 378.
" Reduced by H. from Sn Cl <sub>2</sub> . -----	{ 7.143 ----- 7.166 ----- }	Rammelsberg. Ber. 3, 725.
" Precipitated -----	7.195 -----	
" Remelted -----	7.310 -----	[817. Roberts and Wrightson. Bei. 5,
" -----	7.5 -----	
" -----	7.267, 0° -----	Quinke. P. A. 135, 642.
" -----	7.25 -----	E. Wiedemann. P. A. (2), 20, 232.
" Allotropic -----	{ 5.809, 5.781, 19° ----- 5.802, 19.5 ----- }	Two lots. Schertel. J. P. C. (2), 19, 322.
" Allotropic convert- ed by heating. -----	{ 7.280, 15° ----- 7.304, 19° ----- }	
" Allotropic -----	{ 6.020, 6.002, 19° ----- 5.930, 12°.5 ----- }	
" Allotropic after re- conversion. -----	7.24 — 7.27 -----	
" Rhombic cryst. -----	6.52 -----	
" " -----	6.56 -----	Trechmann. Z. K. M. 5, 625.
" Ordinary -----	7.387 -----	Richards. Tr. Amer. Inst. Min. Eng. 11, 235.
" Allotropic -----	6.175 -----	
" Not pressed -----	7.286, 10° -----	Spring. Ber. 16, 2724.
" Once " -----	7.292, 10°.25 -----	
" Twice " -----	7.296, 11° -----	
" -----	7.3006, 0° -----	Vicentini and Omodei. Bei. 11, 769.
" -----	7.1835, 226°, solid -----	
" -----	6.988, 226°, molten -----	
" Fused -----	6.934, m. of 3. -----	Playfair and Joule. M. C. S. 3, 75.
" " -----	7.025 -----	Roberts and Wrightson. Ann. (5), 30, 181.
" " -----	6.974 -----	
" " -----	7.144 -----	Quinke. P. A. 135, 642.
Lead -----	11.445 -----	Muschenbroek. See Böttger.
" -----	11.352 -----	Brissou. P. des C.
" -----	11.207 -----	Böckmann. See Böttger.
" -----	11.1603 -----	Guyton. Ann. 21, 3.
" -----	11.3303 -----	Kupffer. Ann. (2), 40, 292.
" -----	11.346, 15°.5 -----	Crichton. P. M. 16, 48.
" Wire -----	11.3775 -----	Baudrimont. J. P. C. 7, 278.
" -----	11.352 -----	Herapath. P. M. 64, 321.
" -----	11.3888 -----	Karsten. Schw. J. 65, 394.
" -----	11.231, m. of 4 -----	Playfair and Joule. M. C. S. 3, 68.
" -----	11.370, 0° -----	Reich. J. P. C. 78, 328.
" -----	11.3525, 18° -----	
" -----	11.395, 4° -----	Streng. J. 13, 187.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Lead	11.361, 70°	Mallet. A. J. S. (3), 8, 212.
" Cooled slowly from fusion.	11.254	St. Chaire Deville. P. M. (4), 11, 144.
" Cooled quickly from fusion.	11.363	
" Electrolytic.	11.542	
" Electrolytic, fused and cooled quickly.	11.225	
"	11.376, 14°	Holzmann. J. 13, 112.
"	11.344, 1°	Extremes Schweitzer. Am. Chem. 7, 171.
"	11.377, 1°	
"	11.335, 0°	
"	11.4	Quinke. P. A. 97, 396. [817, Roberts and Wrightson. Ber. 5,
" Not pressed	11.350, 14	Spring. Ber. 16, 2724.
" Once "	11.501, 14	
" Twice "	11.492, 16°	
"	11.359, 0°	Vicentini and Onodori. Ber. 11, 769.
"	11.005, 325°, solid	
"	10.645, 325°, molten	
" Molten	10.509, m. of 3	Playfair and Joule. M. C. S. 3, 71.
"	11.07	Mallet. A. J. S. (3), 8, 212.
"	10.37	Two methods. Roberts and Wrightson. Ann. (5), 39, 181.
"	10.65	
"	10.952	Quinke. P. A. 135, 642.
Thorium*	7.657	Chydenius. J. 16, 194.
"	7.795	
" Crystallized	11.230	Nilson. Ber. 16, 160. Compare earlier paper. Ber. 15, 2544.
" Non-crystallized	10.968	
Nitrogen, Liquefied	11.60, 44.—23°	Gilletet and Hautefeuille. C. R. 92, 1086.
"	37 to 38, 0°	
"	1552, —146°, 6	Wroblevsky. C. R. 102, 1010.
"	5842, —153°, 7	
"	83, —193°	
"	866, —202°	Olszewski. P. A. (2), 31, 73.
"	859	
"	886 —194°, 4, boiling point.	
"	894	Berzelius. See Bottger.
"	905	
Phosphorus, Common	1.77	
"	2.09	Bottger. Watts' Dict.
"	1.800	Playfair and Joule. M. C. S. 3, 69.
"	1.826	
"	1.840	Schrotter. J. 1, 336.
"	1.8262	Kepp. A. C. P. 93, 129.
"	1.8265	
"	1.823, 35	Gladstone and Dale. J. 12, 73.
"	1.83676, 0	
"	1.82321, 20	Pisani and De Franchis. Ber. 8, 70
"	1.80681, 44	
" Red	1.794, 40	Schrotter. J. 1, 336.
"	2.08	Schrotter. J. 3, 262.
"	2.106	
" Cryst.	2.14	Two preparations. Brodie. J. 5, [350,
"	2.24	
"	2.34 15, 15	Hatfield. J. 18, 130.

\* Nilson's determinations are the only ones having any present value. Chydenius' work has merely historical interest.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Phosphorus. Red. Cryst.	2.34, 0°	Troost and Hautefeuille. Ber. 7, 482.
" " " "	2.148, 0°, prep. at 265°	
" " " "	2.19, 0° " 360°	
" " " "	2.293, 0° " 500°	
" Molten	1.744	Playfair and Joule. M. C. S. 3, 76.
" " " "	1.88, 45°	Schrötter. J. 1, 336.
" " " "	1.763	Gladstone and Dale. J. 12, 73.
" " " "	1.74924, 40°	Boils at 278° 3. Pisati and De Franchis. Ber. 8, 70.
" " " "	1.6949, 100°	
" " " "	1.6027, 200°	
" " " "	1.52867, 280°	
" " " "	1.4850, at boiling point.	Ramsay and Masson. Ber. 13, 2147.
" " " "	1.833	Quinke. P. A. 135, 642.
Vanadium	5.5, 15°	Roscoe. P. T. 1869, 679.
" " " "	5.866 } 15°	Setterberg. Of. Ak. St. 1882, 10, 13.
" " " "	5.875 }	
Arsenic	5.7633	Brissou. P. des C.
" " " "	5.766	Mohs. See Böttger.
" " " "	5.7633	Stromeyer. " "
" " " "	5.884	Turner.
" " " "	5.700 }	Guibourt. B. J. 7, 128.
" " " "	5.959 }	
" " " "	5.672	Herapath. P. M. 64, 321.
" " " "	5.6281	Karsten. Schw. J. 65, 394.
" Native	5.736	Breithaupt. J. P. C. 16, 475.
" " " "	5.722 }	Breithaupt. J. P. C. 11, 151.
" " " "	5.734 }	
" " " "	5.230	Playfair and Joule. M. C. S. 3, 72.
" " " "	5.395, 12° 5	Ludwig. J. 12, 183.
" " " "	5.726 }	Bettendorff. J. 20, 253.
" " " "	5.728 }	
" " " "	14°	Mallet. B. S. C. 18, 438.
" After fusion	5.709, 19°	
" Allotropic	4.710 }	Bettendorff. J. 20, 253.
" " " "	4.716 }	
" " " "	4.6 to 4.7	Engel. C. R. 96, 498.
" Compressed	4.91	Spring. Ber. 16, 326.
" Allotropic	3.7002 to 3.7100, 15°	Rückoldt. A. C. P. 240, 215.
Antimony	6.702	Brissou. P. des C.
" " " "	6.712	Hatchett. See Böttger.
" " " "	6.733	Böckmann. " "
" " " "	6.852	Muschenbroek. " "
" " " "	6.860	Bergmann. " "
" " " "	6.646	Mohs. " "
" " " "	6.6101	Breithaupt. " "
" " " "	6.7006	Karsten. Schw. J. 65, 394.
" " " "	6.715	Marchand and Scheerer. J. P. C. [27, 193.
" " " "	6.705, 3° 75, m. of 3 }	Dexter. P. A. 100, 567.
" " " "	6.6987 }	
" " " "	6.7102 }	Extremes }
" " " "	6.713, 14°	
" " " "	6.697	Matthiessen. J. 13, 112.
" " " "	6.7022, m. of 6 }	Schröder. P. A. 107, 113.
" " " "	6.6957 }	
" " " "	6.7070 }	Extremes }
" " " "	6.620, 0°	
" Not pressed	6.675, 15° 5 }	Cooke. Proc. Amer. Acad. 1877
" Once " "	6.753, 15° }	
" Twice " "	6.740, 16° }	Quinke. P. A. 135, 642.
		Spring. Ber. 16, 2724.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Antimony, Amorphous	5.741	Gore, J. 13, 172
" "	5.814	
" Molten	6.646	
" "	6.529	Playfair and Joule, M. C. S. 3, 77
" "	6.528	Quinke, P. A. 135, 642
Bismuth	9.67	Muschenbroeck, See Bottger.
"	9.822	Brissou, P. des C.
"	9.800	Leonhard, See Bottger.
"	9.8827	Thénard, " "
"	9.8827	Berzelius.
"	9.841	Herauph, P. M. 64, 321.
"	9.6542	Karsten, Schw. J. 65, 394
" Pure	9.799, 10°	Marchand and Scheerer, J. P. C. 27, 193.
" Commercial	9.783	
" Compressed	9.556	
" Crystallized	9.935	C. St. Claire Deville, J. 8, 15
" Quickly cooled from fusion.	9.977	
"	9.823, 12°	
"	9.743, m. of 3	Holzmann, J. 13, 112
"	9.82	Schroder, P. A. 197, 116.
"		Roberts and Wrightson, Ber. 5, 817.
"	9.819, 0°	Quinke, P. A. 135, 642
" Not pressed	9.804, 135.5	
" Once "	9.856, 15°	
" Twice "	9.863, 15°	Spring, Ber. 16, 2724
"	9.787, 0°	Vicentini and Onodé, B. 11, 769.
"	9.673, 2702.9	
"	10.004, 2702.9	
" Molten	9.798	Playfair and Joule, M. C. S. 3, 75.
"	10.039	Roberts and Wrightson, By two methods, Nature, 22, 448.
"	10.055	
"	9.709	
Columbium, Niobium	6.0 to 7.37	Quinke, P. A. 135, 642
"	7.06, 15°	Marignac, J. 21, 214
"	7.06, 15°	Roscoe, C. N. 37, 26
Tantalum	10.08 to 10.78	Rose, J. 9, 396.
Oxygen, Liquid	1.6787	By two methods, Pictet, Ann. (5), 13, 193.
"	1.6883, m. of 4	
"	1.8402	
"	1.8655	Pictet, recalculated by Oefter, Ann. (5), 19, 274
"	1.58, 165, 170, 0	Cailliet and Heintgen, C. R. 92, 1086.
"	1.84, 188, 189, 23	
"	1.895	
"	1.899—130, m. of 12	Wroblevsky, C. R. 97, 146.
"		Wroblevsky, P. A. 21, 20, 867
"	1.7555—179, 57	Olzowski, Ber. 17, 363, 198
"	1.806—144, 41	
"	1.877—139, 31	
"	1.110—181, 4 boiling	Olzowski, P. A. (2), 61, 73.
"	1.137—181, 4 boiling point.	
"	1.137	
"	1.6—118	Wroblevsky, C. R. 102, 1010.
"	1.24—200	
"	1.907	
Sulphur, Roll	1.907	Brissou, P. des C.

\* Probably the hydride, C<sub>2</sub>H<sub>4</sub>.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Sulphur. Roll-----	1.868 -----	Böckmann.
" Flowers-----	2.086 -----	Gehler.
" Cryst.-----	1.898 -----	Fontenelle.
" From solution-----	1.927 -----	Bischof.
" Cryst.-----	1.989 -----	Breithaupt.
" Roll-----	1.9777 } -----	Quoted by Marchand and Scheerer. J. P. C. 24, 129.
" "-----	2.0000 } -----	
" Prismatic-----	2.072 -----	
" Native-----	2.086 -----	
" Soft-----	2.027 -----	Osaun.
" Native-----	2.05001 } -----	Karsten. Schw. J. 65, 394.
" From fusion-----	1.9889 } -----	
" Prismatic-----	1.982 } -----	Marchand and Scheerer. J. P. C. 24, 129.
" Native-----	2.066 } -----	
" From solution-----	2.0518 } -----	Kopp. A. C. P. 93, 129.
" Soft-----	1.957 } -----	
" Native-----	2.069 -----	C. St. Claire Deville. J. 1, 365.
" Soft-----	1.919 -----	
" "-----	1.928 -----	Playfair and Joule. M. C. S. 3, 79.
" Prismatic-----	1.958 } -----	
" Native-----	2.070 -----	Brame. C. R. 35, 748.
" From solution-----	2.063 } -----	
" Crystallized-----	2.010 -----	Müller. J. 19, 118.
" Flowers-----	1.913 } -----	
" Waxy-----	1.921 -----	Pisati. Ber. 7, 361.
" Native, cryst.-----	2.0757 } -----	
" Soft-----	1.87 to 1.9319 } -----	Spring. Bei. 5, 853.
" Amorphous, Yellow.-----	1.87 -----	
" Amorphous, Brown.-----	1.91 —1.93 } -----	Spring. Bei. 5, 854. From Bul- letin de l'Acad. Roy. de Belg. (3), 2, 83—110, 1881.
" Crystallized-----	2.0748, 0° -----	
" Insoluble-----	1.9556, 0° -----	Maquenne. Ber. 17, ref. 199.
" "-----	1.9496, 20° -----	
" "-----	1.9041, 40° -----	Schrauf. Z. K. M. 12, 325.
" "-----	1.9438, 60° -----	
" "-----	1.9559, 80° -----	Playfair and Joule. M. C. S. 3, 76.
" "-----	1.9643, 100° -----	
" Cryst. from CS <sub>2</sub> -----	2.0477, 0° -----	At the boiling point, 446°. Ram- say. J. C. S. 35, 471.
" "-----	2.0370, 20° -----	
" "-----	2.0283, 40° -----	Berzelius. See Böttger.
" "-----	2.0182, 60° -----	
" "-----	2.0014, 80° -----	
" "-----	1.9756, 100° -----	
" From Sicily-----	2.0788, 0° -----	
" "-----	2.0688, 20° -----	
" "-----	2.0583, 40° -----	
" "-----	2.0479, 60° -----	
" "-----	2.0373, 80° -----	
" "-----	2.0220, 100° -----	
" Lamellæ-----	2.041 —2.049 -----	
" Sicilian-----	2.06665, 16°.75 -----	
" Molten-----	1.801 } Extremes of 5 } -----	
" "-----	1.815 } determinat'ns } -----	
" "-----	1.4794, m. of 5 } -----	
" "-----	1.4578 } Extremes } -----	
" "-----	1.5130 } -----	
Selenium-----	4.3 to 4.32 -----	Berzelius. See Böttger.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Selenium	4.310	Boullay. See Bottger.
"	4.808, 15°	Hittorf. J. 4, 319.
" Cryst. fr. fusion	4.805	Schaffgotsch. J. 6, 329.
" " "	4.796	
" Amorphous	4.276	
" " "	4.286	
" Precip. Red	4.245	Schaffgotsch. J. 6, 329.
" " "	4.275	
" Precip. after heat g to 50°	4.250	
" " "	4.297	
" Crystallized	4.460	Mitscherlich. J. 8, 314.
" " "	4.509	
" " "	4.700	
" " from solution.	4.760	
" " "	4.788	Neumann. P. A. 126, 138.
" Crystallized	4.406, 21°	
" Black	4.80	
" " "	4.81	
" Precip. Red	4.260	Rathke. J. P. C. 108, 235.
" " "	4.28	
" Gray	4.465	
" " Granular	4.514	
" Laminated, from alkali selenides.	4.77 4.79 4.86	Rammelsberg. P. A. 152, 154.
" Cryst. from CS <sub>2</sub>	4.418	
" " " "	4.54	
" " " "	4.59	
" Amorphous	4.27	Spring. Bel. 5, 854. From Bull. de l'Acad. Roy. de Belg. (3), 2, 88-110, 1881
" " "	4.34	
" Melted	4.29	
" " "	4.36	
" Compressed	4.7994, 0	Quinke. P. A. 135, 642.
" " "	4.7869, 20	
" " "	4.7669, 40	
" " "	4.7526, 60	
" " "	4.7351, 80	Klaproth. Ann. 25, 273.
" " "	4.7167, 100	
" Uncompressed	4.7312, 0	
" " "	4.7176, 20	
" " "	4.7019, 40	Magnus. See Bottger.
" " "	4.6826, 60	
" " "	4.6623, 80	
" " "	4.6396, 100	
" Fused	4.2	Berzelius. P. A. 28, 392.
Tellurium.	6.415	Lowe. J. P. C. 60, 163.
"	6.437	Reichenstein. See Bottger.
"	6.2445, melted	Spring. Bel. 5, 854. From Bull. de l'Acad. Roy. de Belg. (3), 2, 88-110, 1881
"	6.480	
"	6.443	
" Compressed	6.2549, 0	
" " "	6.2449, 20	Quinke. P. A. 135, 642.
" " "	6.2294, 40	
" " "	6.2170, 60	
" " "	6.2009, 80	
" " "	6.1846, 100	

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Tellurium. Uncompressed.	6.2322, 0°	Spring. Bei. 5, 854. From Bull. de l'Acad. Roy. de Belg. (3), 2, 88-110, 1881.
" " "	6.2194, 20°	
" " "	6.2052, 40°	
" " "	6.1500, 60°	
" " "	6.1366, 80°	
" " "	6.1640, 100°	
" " "	6.204	Klein and Morel. Ann. (6), 5, 61.
" " "	6.215	
Chromium	7.3	Bunsen. Watts' Dict.
" Crystallized	6.81, 25°	Wöhler. J. 12, 169.
" Red. by K Cy	6.20	Loughlin. J. 21, 220.
Molybdenum	8.490	Bucholz. Nich. J. 20, 121.
" " "	8.615	
" " "	8.636	
" " "	8.60	Debray. J. 11, 157.
" Red. by K Cy	8.56	Loughlin. J. 21, 220.
Tungsten	17.60	D'Elhuyart. See Böttger.
" " "	17.22	Allan and Aiken. " "
" " "	17.4	Bucholz. Schw. J. 3, 1.
" " "	16.54	Uslar. J. 8, 372.
" " "	17.50	
" " "	18.26	
" Reduced by H	17.1 to 17.3	Bernoulli. J. 13, 152.
" " C	17.9 to 18.12	
" " "	16.6	Prepared by three methods. Zett- now. J. 20, 218.
" " "	17.2	
" " "	18.447, 17°	
" " "	19.261, 12°	Roscoe. C. N. 25, 61.
" " "	18.25	Waddell. A. C. J. 8, 287.
" " "	18.77	
Uranium	18.40	Pelilot. J. 9, 380.
" " "	18.33	Pelilot. A. C. P. 149, 128.
" " "	18.685, 4°, m. of 3	Zimmermann. Ber. 15, 851.
Chlorine. Liquefied	1.33, 15°	Faraday. P. T. 1823, 164.
Bromine	2.966	Balard. Ann. (2), 32, 337.
" " "	2.98	Löwig. See Böttger.
" " "	2.99	
" " "	3.18718, 0°	Pierre. Ann. (3), 20, 5.
" " "	3.18828, 0°	Thorpe. J. C. S. 37, 172.
" " "	2.98218, 59°.27	
" " "	2.9483, m. of 4	
" " "	2.9471	Taken at the boiling point. Ram- say. Ber. 13, 2146.
" " "	2.9593	
" " "	3.1875, 0°	
Iodine	4.948	Van der Plaats. J. C. S. 50, 849.
" Solid	4.9173, 40°.3	Gay Lussac. Ann. 91, 5.
" " "	4.886, 60°	
" " "	4.857, 79°.6	Billet. J. 8, 46.
" " "	4.841, 89°.8	
" " "	4.825, 107°	
" Molten	4.004, 107°	
" " "	3.988, 111°.7	
" " "	3.944, 124°.3	
" " "	3.918, 133°.5	[4, 241.
" " "	3.866, 151°	
" " "	3.796, 170°	
" Solid	5.030	Playfair. Proc. Roy. Soc. Edin.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Manganese	6.861 } 7.10 }	Bergmann.
"	8.03 }	Bachmann. See Bottger.
"	8.013 }	John. P. M. 2, 176.
"	7.138 }	
"	7.206 }	Brunner. J. 10, 202.
Iron	7.788 }	Brisson. P. des C.
" Wrought	7.790 }	Karsten. Schw. J. 65, 394.
" Wire in several dif-	7.6305 }	
" ferent conditions.	7.6000 }	
" Hammered	7.7312 }	Baudrimont. J. P. C. 7, 268.
" Bar	7.7433 }	
"	7.4839 }	Broding. See Percy's Metallurgy.
"	7.8797 }	
"	7.865 }	Berzelius. " " "
" Reduced by zinc (vapor.)	7.55 }	Poumaréde. J. 2, 281.
" Reduced by C.	7.430 }	Playfair and Joule. M. C. S. 3, 72.
" Electrolytic	8.1393, 152.5 }	Smith. See Percy's Metallurgy.
" Fused in H., not forged.	7.880, 162 }	
" Fused in H., forged	7.868, 162 }	
" Fused in H., wire	7.847, 162 }	Caron. C. R. 70, 1263.
" Fused in crucible	7.833, 162 }	
" Good commercial	7.852, 162 }	
" Reduced by H.	7.398 }	Schiff.
"	8.007 }	
"	6.03 }	Stahlschmidt. J. 18, 255.
" Molten	6.88 }	Roberts and Wrightson. Bei. 5, 817. [6, 145.
" Molten steel	8.05 }	Petruschewsky and Alexejeff. Bei.
Nickel	7.807 }	Brisson. P. des C.
"	8.279, cast }	
"	8.666, forged }	Richter. Ann. 53, 164.
" Cast	8.580 }	
" Forged	8.820 }	Tupputi. Ann. 78, 133.
"	8.932, 122.5 }	Tourte. Ann. 71, 103.
"	8.477 }	
"	8.713 }	Baumgartner. See Bottger.
"	8.937 }	Brunner. " "
"	9.000 }	Bergmann. " "
" Reduced by H.	7.861 }	
"	7.804 }	Playfair and Joule. M. C. S. 3, 71.
" Wire	8.88, 4 }	Arndtsen.
" Reduced by H.	8.975 }	
"	9.261 }	Rammelsberg. J. 2, 282.
"	8.900 }	
Cobalt	8.710 }	Schroder. P. A. 107, 113.
"	8.485 }	Lampadius. Erd. J. 11, 5, 390.
"	9.132 }	Brunner. See Bottger.
"	8.500 }	Gehlen. " "
"	8.5131 }	Mitscherlich. " "
"	8.5384 }	Berzelius. " "
"	8.538 }	Hany and Tassner. See Bottger.
" Reduced by H.	7.718 }	T. H. Henry. M. C. S. 3, 59.
"	8.260 }	Playfair and Joule. M. C. S. 3, 71.
"	8.977, m. of 5 }	Rammelsberg. J. 2, 282.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Copper	8.895	Hatchett. P. T. 1803, 88.
" Rolled	8.878	Brisson. P. des C.
" Cast	8.788	
" "	8.83	Berzelius. See Böttger.
" Drawn	8.9463	
" Hammered	8.9587	
"	8.78	Kupffer. Ann. (2), 25, 356.
"	8.900	Herapath. P. M. 64, 321.
"	8.721	Karsten. Schw. J. 65, 394.
" Wire in several different conditions.	8.6225 8.8912 8.7059 8.8787	Baudrimont. J. P. C. 7, 287.
" Hammered	8.8893	
" Cast, slowly cooled	8.4525	
" Crystallized	8.940	Marchand and Scheerer. [27, 193. J. P. C.
" Cast	8.921	
" Various sorts of wire.	8.939 8.949 8.930 8.951	
" Sheet	8.952	Mallet. D. J. 85, 378.
" Pressed	8.931	
" Electrolytic	8.914	
"	8.667	Playfair and Joule. M. C. S. 3, 57.
" Finely divided	8.428	
" "	8.483	
" "	8.330	Playfair and Joule. J. C. S. 1, 121.
" Electrolytic	8.884	
" "	8.941	
" "	8.934	Schiff.
" Finely divided	8.367	
" "	8.41613	
" Hammered	8.855	O'Neill. Memoirs Manchester Philosophical Society, (3), 1, 243.
" "	8.878	
" Rolled	8.879	
" "	8.898	Whitney. J. 12, 769.
" Annealed	8.884	
" "	8.896	
"	8.902, 12°	Schröder. P. A. 107, 113.
" Native	8.838	
"	8.952	
" Electrolytic, cast	8.958	Dick. P. M. (4), 11, 409.
" "	8.916	
" " wire	8.958	
" " "	8.853	Quincke. P. A. 97, 396.
" " "	8.733	
" Plate	8.902, 0°	
"	8.945, 0° (in vacuo)	Hampe. C. C. 6, 379. [817.
"	8.9565, 17°	
"	8.8	
" Allotropic	8.0 to 8.2	Roberts and Wrightson. Bei. 5, 28, 366.
" Molten	7.272	Playfair and Joule. M. C. S. 3, 77.
"	8.217	Roberts and Wrightson. Bei. 5, 817.
Silver	10.472	Brisson. P. des C.
"	10.362, 10°	Biddle. P. M. 30, 152.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Silver	10.434	
"	10.474	Lengsdorf.
"	10.4282	Karsten. Schw. J. 65, 394.
" Cast, slowly cooled	10.1053	
" Same mass, rolled	10.5513	
" Hammered	10.4476	
" Brittle	9.8463	Baudrimont. J. P. C. 7, 287.
" Granulated	9.6323	
" Cryst. in lumine	9.5538	
" Wire	10.4913	
"	10.434	Breithaupt. J. P. C. 11, 151.
"	10.482	Karmarsch. J. P. C. 13, 193.
"	10.5224	Playfair and Joule. M. C. S. 3, 66.
"	10.5374	
"	10.505	
" Cast	10.5065	
" Pressed	10.5532	
" Precip. powdery	10.6191	G. Rose. P. A. 73, 1.
"	10.5287, m. of 13	
"	10.5237, m. of 4	
"	10.5283, m. of 8	
"	10.468, 13	Holzmann. J. 13, 112.
"	10.575	Christomanos. J. 21, 272.
" After heating in vacuo	10.512	Dumas. C. N. 37, 82.
"	10.412, 1	Zimmermann. Ber. 15, 850.
"	10.57	Roberts. C. N. 31, 143.
"	10.621, 69	Quinke. P. A. 135, 612.
" Molten	9.1314	Playfair and Joule. M. C. S. 3, 78.
"	9.2814	
"	9.4612	
"	9.514	Roberts and Wrightson. Ann. (5), 39, 181.
"	9.404	
"	10.002	Quinke. P. A. 135, 612.
Gold	19.258	Brissou. P. des C.
" Hammered	19.207	Elliot. Quoted by Rose.
"	19.346-19.4	Lewis. " " "
" Pressed	19.3336, 17.5	
" Ppt. by oxalic acid	19.2981, 17.5	
" Cast and pressed, 16 samples differ	19.2881, 17.5, m. of 37	G. Rose. P. A. 73, 1.
" Entirely prepared,	19.2689, 17.54	
"	19.3296, 17.54	
" Ppt. by oxalic acid	19.441	G. Rose. P. A. 75, 403.
"	19.265, 13	
" Before rolling	19.2945	Roberts and Rigg. J. C. S. (2), 12, 204.
" Once rolled	19.29824	
" M. Ben	17.999	Quinke. P. A. 135, 612.
Ruthenium	11.04	
"	11.47	Dewille and Debray. J. 12, 234.
"	12.264, 0	Dewille and Debray. C. R. 83, 928.
Rhodium	11.04	Wollaston. P. T. 1804, 426.
"	11.2	Cloué. Schw. J. 43, 316.
"	11.9	Hare. A. J. S. (2), 2, 365.
"	12.1	Dewille and Debray. J. 12, 240.
Palladium	11.34	
"	11.84	Wollaston. See Bottger.
"	12.148	Lowry. " "
"	11.852	Lampadius. Watts' Dict.

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Palladium	11.8	Vauquelin. Ann. 88, 167.
"	11.041, 18°	Cloud. Schw. J. 1, 362.
"	10.923	Breithaupt. See Böttger.
"	11.628	Benneke and Reinecker. See Böttger.
"	11.80	Coek. M. C. S. 1, 161.
" Hammered	11.80	
"	11.752	Breithaupt. J. P. C. 11, 151.
"	11.4, 22° .5	Deville and Debray. J. 12, 237.
"	12.0	Troost and Hautefeuille. C. R. 78, 970.
"	12.104	Lisenko. Ber. 5, 29.
" Molten	10.8	Quineke. P. A. 135, 642.
Osmium	21.40	Deville and Debray. J. 12, 232.
"	22.477	Deville and Debray. C. R. 82, 1076.
Iridium. Porous globule.	18.680	Children. See Böttger.
"	21.78	Eckfeldt and Boyé, for Hare. A. J. S. (2), 365.
"	21.83	
" Black	18.6088	G. Rose. P. A. 75, 403.
"	21.15	Deville and Debray. J. 12, 242.
"	22.421, 17° .5	Deville and Debray. P. M. (4), 50, 561.
"	22.38	Matthey. C. N. 40, 240.
Platinum	20.85	Borda. Quoted by Marchand. J. P. C. 33, 385.
"	20.98	
"	21.06	
" Cast	19.5	Brisson. P. des C.
" Hammered	20.3	
" Wire	21.0	
"	21.7	Klaproth. Quoted by Marchand.
"	21.061	Sickingen. " " "
"	21.45	Berzelius. " " "
"	21.47	Berthier. " " "
"	21.53	
" Cast	17.7	Precht. " " "
"	21.3	Faraday. " " "
" Hammered	20.9	E. D. Clarke. " " "
" Spongy	21.47	Thomson. " " "
"	21.343	Scholz. See Böttger.
"	21.359	Meissner. " " "
" Wire	21.16	Wollaston. P. A. 16, 158.
"	21.40	
"	21.53	
" Hammered	21.25	Liebig. P. A. 17, 101.
" Spongy	17.572	
"	15.780	
"	16.319	Scholz. See Böttger.
" Black	17.894	
"	21.2668	Marchand. J. P. C. 33, 385.
"	21.3092	
" Hammered	21.31	Hare. A. J. S. (2), 2, 365.
"	21.16	
"	21.23	
" Spongy	16.634	Rose. P. A. 75, 403.
" Precip. black	20.9815	
"	20.7732	
"	22.8926	

NAME.	SPECIFIC GRAVITY.	AUTHORITY.
Platinum, Precip. black	22.0345	Rose, P. A. 75, 403.
" Black	26.1418, 15°, 7 ?	
" " "	17.766	Playfair and Joule, M. C. S. 3, 57.
" Spongy	21.169	
" " "	21.243	
" " "	21.15	Deyville and Caron, J. 10, 259.
" " "	21.15	Deyville and Debray, J. 12, 249.
" Very pure	21.504, 17° 6	Deyville and Debray, P. M. 44, 50, 560.
" Molten	18.915	Quincke, P. A. 135, 642.

## II. INORGANIC FLUORIDES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen fluoride or hydrofluoric acid, liquid.	H F	1.0609	Davy, P. T. 1813, 263.
" " "	"	.9922, 11°	Gore, P. T. 1869, 173.
" " "	"	.9879, 12° 7	
" " "	"	.9885, 13° 6	
" " "	"	1.056, 15° 5	
Lithium fluoride	Li F	2.582	Schröder, Dm. 1873.
" " "	"	2.608	
" " "	"	2.612	
" " "	"	2.295, 21° 5	Clarke, A. J. S. (3), 13, 292.
Sodium fluoride	Na F	2.713, m. of 7	Schröder, Dm. 1873.
" " "	"	2.601, Ex.	
" " "	"	2.772, tremes	
" " "	"	2.558, 11° 5	
Potassium fluoride	K F	2.454, 12°	Bodeker, B. D. Z.
" " "	"	2.459	Schröder, Dm. 1873.
" " "	"	2.476	
" " "	"	2.507	
" " "	"	2.096, 21° 5	Clarke, A. J. S. (3), 13, 292.
" " "	"	2.350, m. of 3	Schröder, Ber. 11, 2018.
Rubidium fluoride	Rb F	3.202, 16° 5	Clarke, A. J. S. (3), 13, 293.
Ammonium hydrogen fluoride	Am H F <sub>2</sub>	1.211, 12°	Bodeker, B. D. Z.
Silver fluoride	Ag F <sub>2</sub>	5.852, 15° 5	Gore, C. N. 21, 28.
Magnesium fluoride	Mg F <sub>2</sub>	2.472	Schröder, Dm. 1873.
" " " Sellaite	"	2.856, 12°	Cossa, Ber. 10, 295.
" " "	"	2.972	Strüver, Dana's Min., 2d App.
Zinc fluoride	Zn F <sub>2</sub>	4.612, 12°	Clarke, A. J. S. (3), 13, 291.
" " "	"	4.556, 17°	
" " "	Zn F <sub>2</sub> + H <sub>2</sub> O	2.567, 10°	
" " "	"	2.535, 12°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cadmium fluoride -----	Cd F <sub>2</sub> -----	5.994, 22°, m. of 7.	Kehler. A. C. J. 5, 241.
Calcium fluoride -----	Ca F <sub>2</sub> -----	3.183, m. of 60	Kenngott. J. 6, 853.
" " -----	" -----	3.150 -----	Smith. J. 8, 976.
" " -----	" -----	3.138 -----	Schiff. A. C. P. 108, 21.
" " -----	" -----	3.162 -----	Luca. J. 13, 98.
" " Precip. -----	" -----	3.086 } -----	Schröder. Dm. 1873.
" " Ignited -----	" -----	3.150 } -----	
Strontium fluoride -----	Sr F <sub>2</sub> -----	4.202 } -----	" "
" " -----	" -----	4.236 } -----	
" " -----	" -----	4.210 -----	Schröder. P. A. 6 Erganz. Bd. 622.
Barium fluoride -----	Ba F <sub>2</sub> -----	4.58, 13°	Bödeker. B. D. Z.
" " -----	" -----	4.824 } -----	Schröder. Dm. 1873.
" " -----	" -----	4.833 } -----	
Lead fluoride -----	Pb F <sub>2</sub> -----	8.241 -----	" "
Nickel fluoride -----	Ni F <sub>2</sub> -----	2.855, 14° } -----	Clarke. A. J. S. (3), 13, 291.
" " -----	Ni F <sub>2</sub> . 3 H <sub>2</sub> O -----	2.014, 19° } -----	
Aluminum fluoride -----	Al F <sub>3</sub> -----	3.065 } -----	Bödeker. B. D. Z.
" " -----	" -----	3.13 } 12° -----	
Arsenic trifluoride, l -----	As F <sub>3</sub> -----	2.73 -----	Unverdorben. P. A. 7, 316.
" " -----	" -----	2.66 -----	MacIvor. C. N. 30, 169.
" " -----	" -----	2.6659, 0° } -----	Thorpe. J. C. S. 37, 372. [874.
" " -----	" -----	2.4497, 60°.4 } -----	
" " -----	" -----	2.734 -----	Mossan. C. R. 99, Gott and Muir. J. C. S. 53, 137.
Bismuth fluoride -----	Bi F <sub>3</sub> -----	5.32, 20° } -----	Dana's Mineralogy. Durnew. J. 4, 820.
" oxyfluoride -----	Bi O F -----	7.5, 20° } -----	
Cryolite. Greenland -----	Na <sub>3</sub> Al F <sub>6</sub> -----	2.9—3.077 -----	Hillebrand and Cross. A. J. S. (3), 26, 271.
" Siberia -----	" -----	2.95 -----	
" Colorado -----	" -----	2.972, 24° -----	Hermann. J. P. C. 37, 188.
Chiolite -----	Na <sub>3</sub> Al <sub>3</sub> F <sub>14</sub> -----	2.72 -----	
" -----	" -----	2.90 -----	Kokscharow. J. 4, 820.
" -----	" -----	2.842—2.898 -----	Rammelsberg. P. A. 74, 314.
Chodneffite -----	Na <sub>2</sub> Al F <sub>5</sub> -----	3.003 } -----	Rammelsberg. P. A. 74, 314.
" -----	" -----	3.077 } -----	
" -----	" -----	2.62—2.77 -----	Wörth. Dana's Mineralogy.
Pachnolite.* Colorado -----	Na Ca Al F <sub>6</sub> . H <sub>2</sub> O -----	2.965, 17°, m. of 4. } -----	Hillebrand and Cross. A. J. S. (3), 26, 271.
" " -----	" -----	2.962, 22° } -----	
Prosopite. Altenberg -----	Ca Al <sub>2</sub> (F. O H) <sub>8</sub> -----	2.890 } -----	Scheerer. Dana's Mineralogy.
" " -----	" -----	2.898 } -----	
" Colorado -----	" -----	2.880, 23° -----	Hillebrand and Cross. A. J. S. (3), 26, 271.
Ralstonite -----	Na Mg Al <sub>4</sub> F <sub>15</sub> . 3 H <sub>2</sub> O. -----	2.4 -----	Brush. A. J. S. (3), 2, 30.

\*According to Brandl, pachnolite and thomsenolite are distinct species, but Hillebrand and Cross show them to be identical.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ralstonite	$\text{NaMgAl}_4\text{F}_{14} \cdot 3\text{H}_2\text{O}$	2.62	Nordenskiöld, Dana's Min., 3d App.
"	$(\text{MgNa}_2)\text{Al}_2\text{F}_6\text{OH} \cdot 2\frac{1}{2}\text{H}_2\text{O}$	2.550	Penfield and Harper, A. J. S. 33, 32, 381.
Fluocerite	$\text{CeF}_3$ ?	4.7	Berzelius, Dana's Mineralogy.
Tysonite	$4\text{CeF}_3 \cdot 3\text{LaF}_3$	6.13, in mean	Allen and Comstock, A. J. S. 33, 19, 391.
Yttrocerite	?	3.447	Berzelius, Dana's Mineralogy.
Potassium borofluoride	$\text{KBF}_4$	2.55	Stollba, B. S. C. 18, 396.
"	"	2.64	"
Lithium silicofluoride	$\text{Li}_2\text{SiF}_6 \cdot 2\text{H}_2\text{O}$	2.33	Stollba, J. 17, 213.
"	"	2.244	Topsoe, C. C. 4, 76.
Sodium silicofluoride	$\text{Na}_2\text{SiF}_6$	2.5547, 17.5	Stollba, J. P. C. 97, 503.
"	"	2.680, m. of 1	"
"	"	2.674 (ex.)	Schroder, Dm. 1873.
"	"	2.694 (traces)	"
Potassium silicofluoride	$\text{K}_2\text{SiF}_6$	2.6655	Stollba, J. P. C. 97, 503.
"	"	2.649	"
"	"	2.655	"
"	"	2.638	Schroder, Dm. 1873.
"	"	2.704	"
Rubidium silicofluoride	$\text{Rb}_2\text{SiF}_6$	3.3383, 20	Stollba, J. 20, 186.
Cesium silicofluoride	$\text{Cs}_2\text{SiF}_6$	3.3756, 17	Preis, J. 21, 195.
Ammonium silicofluoride	$\text{Am}_2\text{SiF}_6$	1.970	Topsoe, C. C. 4, 76.
"	"	2.056, m. of 5	"
"	"	2.035 (ex.)	Schroder, Dm. 1873.
"	"	2.071 (traces)	"
Calcium silicofluoride	$\text{CaSiF}_6$ ?	2.649	Stollba, J. 33, 200.
"	"	2.675	"
"	$\text{CaSiF}_6 \cdot 2\text{H}_2\text{O}$	2.251	Topsoe, C. C. 4, 76.
Strontium silicofluoride	$\text{SrSiF}_6 \cdot 2\text{H}_2\text{O}$	2.988	Stollba, J. 34, 285.
"	"	2.969	"
Barium silicofluoride	$\text{BaSiF}_6$	4.2794, 21	Stollba, J. 18, 170.
"	"	4.2380, 22	Schweitzer, Univ. of Missouri, special pub. 1876.
Magnesium silicofluoride	$\text{MgSiF}_6 \cdot 6\text{H}_2\text{O}$	1.761	Topsoe, C. C. 4, 76.
Zinc silicofluoride	$\text{ZnSiF}_6 \cdot 6\text{H}_2\text{O}$	2.104	"
"	"	2.121	Stollba, J. R. C. 1, 5, 72.
"	"	2.148	"
Manganese silicofluoride	$\text{MnSiF}_6 \cdot 6\text{H}_2\text{O}$	1.858	Topsoe, C. C. 4, 76.
Iron silicofluoride*	$\text{FeSiF}_6 \cdot 6\text{H}_2\text{O}$	1.96415, 17.5	Stollba, B. S. C. 26, 155.
Nickel silicofluoride	$\text{NiSiF}_6 \cdot 6\text{H}_2\text{O}$	2.109	Topsoe, C. C. 4, 76.
Cobalt silicofluoride	$\text{CoSiF}_6 \cdot 6\text{H}_2\text{O}$	2.067	"
"	"	2.121	Stollba, B. S. C. 26, 155.
"	"	2.1435	"
Copper silicofluoride*	$\text{CuSiF}_6 \cdot 4\text{H}_2\text{O}$	2.535	Topsoe, C. C. 4, 76.
"	$\text{CuSiF}_6 \cdot 6\text{H}_2\text{O}$	2.1576, 19	Stollba, J. 20, 290.
"	"	2.207	Topsoe, C. C. 4, 76.
"	"	2.182	Topsoe and Christensen.

\*According to Stollba, these salts contain  $6\frac{1}{2}$  molecules of water.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium titanofluoride	$K_2 Ti F_6$	2.0797, 12°	Bödeker. B. D. Z.
"	$K_2 Ti F_6 \cdot H_2 O$	2.992	Topsoë. C. C. 4, 76.
Copper titanofluoride	$Cu Ti F_6 \cdot 4 H_2 O$	2.529	" "
Potassium zirconofluoride	$K_2 Zr F_6$	3.582	" "
Zinc zirconofluoride	$Zn Zr F_6 \cdot 6 H_2 O$	2.255	" "
Nickel zirconofluoride	$Ni Zr F_6 \cdot 6 H_2 O$	2.227	" "
Potassium stannifluoride	$K_2 Sn F_6 \cdot H_2 O$	3.053	" "
Ammonium stannifluoride	$Am_2 Sn F_6$	2.887	" "
Manganese stannifluoride	$Mn Sn F_6 \cdot 6 H_2 O$	2.307	" "
Cobalt stannifluoride	$Co Sn F_6 \cdot 6 H_2 O$	2.604	" "
Potassium columboxyfluoride.	$K_2 Cb O F_5 \cdot H_2 O$	2.813	" "
Copper columboxyfluoride	$Cu Cb O F_5 \cdot 4 H_2 O$	2.750	" "
Potassium tantalofluoride.	$K_2 Ta F_7$	4.056	" "
Potassium uranoxylfluoride	$3 K F \cdot U O_2 F_2$	4.263, 20°	Baker. J. C. S. 35, 760.
"	$5 K F \cdot 2 U O_2 F_2$	4.379, 20°	" "
"	$3 K F \cdot 2 U O_2 F_2 \cdot 2 H_2 O$	4.108, 20°	" "
Ammonium uranoxylfluoride.	$3 Am F \cdot U O_2 F_2$	3.186, 20°	" "

## III. INORGANIC CHLORIDES.

## 1st. Simple Chlorides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen chloride or hydrochloric acid, liquef'd	$H Cl$	.908, 0°	Ansdell. C. N. 41, 76. Critical temperature, 51°.25.
"	"	.873, 7°.5	
"	"	.854, 11°.7	
"	"	.835, 15°.8	
"	"	.808, 22°.7	
"	"	.748, 33°	
"	"	.678, 41°.6	
"	"	.619, 47°.8	
Lithium chloride	$Li Cl$	1.998	Kremers. J. 10, 67.
"	"	2.074	Schröder. P. A. 107, 113.
"	Fused	1.515	Quinke. P. A. 138, 141.
Sodium chloride	$Na Cl$	2.2001	Hassenfratz. Ann. 28, 3.
"	"	2.15	Leslie. See Böttger.
"	"	2.26	Mohs.
"	"	2.078	Karsten. Schw. J. 65, 394.
"	"	2.030	Unger. See Böttger.
"	"	2.150	Kopp. A. C. P. 36, 1.
"	"	2.011, m. of 3.	Playfair and Joule. M. C. S. 2, 401.
"	"	2.24	Filhol. Ann. (3), 21, 415.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium chloride	Na Cl	2.155, 15°.5	Holker, P. M. (3), 27, 213.
" " Cryst.	"	2.195 }	Deville, J. 8, 15.
" " After fusion.	"	2.201 }	
" " "	"	2.142 }	Grassi, J. 1, 39.
" " "	"	2.207 }	
" " Halite	"	2.135	Hunt, J. 8, 976.
" " "	"	2.118	Schiff, A. C. P. 108, 21.
" " "	"	2.153	Schroder, P. A. 106, 226.
" " "	"	2.161	
" " "	"	2.145	Buignet, J. 15, 14.
" " "	"	2.1629, 15°	Stollé, J. P. C. 97, 503.
" " "	"	2.1543	Haagen, P. A. 131, 117.
" " "	"	2.06—2.08	Page and Keightley, J. C. S. (2), 10, 566.
" " "	"	2.145	Stas.
" " Natural	"	2.137	Rudolf, Ber. 12, 251.
" " "	"	2.1641, 15°	Belson and Williams, Ber. 14, 2552.
" " Cryst. at 20°	"	2.16171 }	Nied, P. M. (5), 15, 94.
" " Cryst. at 108°	"	2.15491 }	
" " "	"	1.612, at the melting point.	Braun, J. C. S. (2), 13, 31.
" " "	"	2.23	Bruchmann, Ber. [17, 2359.
" " "	"	2.165, 10°	
" " "	"	2.1615, 20°	Andrene, J. P. C. (2), 30, 315.
" " "	"	2.1594, 30°	
" " "	"	2.15665, 40°	Zehnder, P. A. (2), 29, 259.
" " "	"	2.17435, 50°	
" " "	"	2.1881	Quincke, P. A. 135, 612.
" " "	"	2.1887	
" " Fused	"	2.092, 0	Hassentratz, Ann. 28, 3.
" " "	"	2.01	
Potassium chloride	K Cl	1.9367	Kirwan, See Bottger.
" " "	"	1.9151	Karsten, Schw. J. 65, 394.
" " "	"	1.915	Kopp, A. C. P. 36, 1.
" " "	"	1.900	Playfair and Joule, M. C. S. 2, 401.
" " "	"	1.97756, 4	Playfair and Joule, J. C. S. 1, 137.
" " "	"	1.991	Filhol, Ann. (3), 21, 415.
" " "	"	1.995	Schiff, A. C. P. 108, 21.
" " "	"	1.948, 15°.5	Holker, P. M. (3), 27, 213.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium chloride	K Cl	1.995	Schröder. P. A. 106, 226.
"	"	1.986	Buignet. J. 14, 15.
"	"	1.94526, 15°	Stolba. J. P. C. 97, 503.
"	"	1.90—1.91	Page and Keightley. J. C. S. (2), 10, 566.
"	"	1.612, at the melting p't.	Braun. J. C. S. (2), 13, 31.
"	"	1.980, 22°	Spring. Ber. 16, 2724.
"	" Not pressed.	2.071, 20°	
"	" Once pressed.	2.068, 21°	
"	" Twice pressed.		
"	"	1.93	Brügelmann. Ber. 17, 2359.
"	"	1.932, 0°	Quincke. P. A. 135, 642.
"	" Fused.	1.870	
Rubidium chloride	Rb Cl	2.807	Setterberg. Of. Ak. St. 1882, 6, 23.
Cæsium chloride	Cs Cl	3.992	"
Ammonium chloride	Am Cl	1.450	Watson. See Böttger.
"	"	1.54425	Hassenfratz. Ann. 28, 3.
"	"	1.528	Mohs. See Böttger.
"	"	1.578, m. of 3.	Playfair and Joule. M. C. S. 2, 401.
"	"	1.5333, 4°	Playfair and Joule. J. C. S. 1, 137.
"	"	1.52, 15°.5	Holker. P. M. (3), 27, 214.
"	"	1.500	Kopp. A. C. P. 36, 1.
"	"	1.522	Schiff. A. C. P. 108, 21.
"	"	1.550	Buignet. J. 14, 15.
"	"	1.5033	Stolba. J. P. C. 97, 503.
"	"	1.5191	
"	"	1.5209	
"	"	1.456	W. C. Smith. Am. J. P. 53, 145.
Silver chloride	Ag Cl	5.4548	Proust.
"	" Unfused.	5.501	Karsten. Schw. J. 65, 394.
"	" Black'd	5.5671	
"	" After fusion.	5.4582	
"	"	5.129	Hera path. P. M. 64, 321.
"	"	5.548	Boullay. Ann. (2), 48, 266.
"	"	5.55	Gmelin.
"	" Native	5.31	Domeyko. Dana's Min.
"	"	5.43	
"	"	5.517	
"	"	5.5343	Schröder. P. A. 106, 226.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Silver chloride	Ag Cl	5.505, 6°	Roelwell, P. T. 1882,
" " Molten	"	4.946, 451°	1125.
" " "	"	5.5	Quinke, P. A. 135,
" " "	"	5.5	642.
" " "	"	5.5	Quinke, P. A. 158,
" " "	"	5.5	141.
Thallium chloride	Tl Cl	7.90	Willm.
" " "	"	7.92	Lamy, J. 15, 184.
Thallium trichloride	Tl <sub>3</sub> Cl <sub>3</sub>	5.9	" "
Magnesium chloride	Mg Cl <sub>2</sub>	2.477, m. of 2	Playfair and Joule.
" " "	"	1.562, m. of 4	M. C. S. 2, 401.
" " "	"	1.558	Filhol, Ann. (3),
" " "	"	1.55	21, 115.
" " Bischofite	"	1.65	Ochsenius, B. S. M.
" " "	"	1.65	1, 128.
Zinc chloride	Zn Cl <sub>2</sub>	2.756, 13°	Bolker, B. D. Z.
Calcium chloride	Ca Cl <sub>2</sub>	3.6254, 12°	" "
" " "	"	3.655, 16°	P. Knight, F. W. C.
" " "	"	3.324, m. of 3	W. Knight, F. W. C.
Mercurous chloride	Hg Cl	7.1758	Hassensfratz, Ann.
" " "	"	7.14	28, 3.
" " "	"	7.14	Boulay, Ann. (2),
" " "	"	6.9925	43, 266.
" " "	"	6.7107	Karsten, Schw. J.
" " "	"	6.7107	65, 394.
" " "	"	6.7107	Heraupath, P. M. 64,
" " "	"	6.482	321.
" " Native	"	6.482	Haldinger, Dana's
" " "	"	7.178	Min.
" " "	"	7.178	Playfair and Joule.
" " "	"	6.56	M. C. S. 2, 401.
" " "	"	6.56	Schiff, A. C. P. 108,
" " "	"	6.56	21.
Mercuric chloride	Hg Cl <sub>2</sub>	5.4398	Hassensfratz, Ann.
" " "	"	5.43	28, 3.
" " "	"	5.43	Groelin.
" " "	"	5.42	Boulay, Ann. (2),
" " "	"	5.42	43, 266.
" " "	"	5.4032	Karsten, Schw. J.
" " "	"	5.4032	65, 394.
" " "	"	6.223	Playfair and Joule.
" " "	"	6.223	M. C. S. 2, 401.
" " "	"	5.448, m. of 3	Schroder, P. A. 107,
" " "	"	5.448	113.
Calcium chloride	Ca Cl <sub>2</sub>	2.244	Boulay, Ann. (2),
" " "	"	2.269	43, 266.
" " "	"	2.0401	Karsten, Schw. J.
" " "	"	2.0401	65, 394.
" " "	"	2.480	Playfair and Joule.
" " "	"	2.480	M. C. S. 2, 401.
" " "	"	2.240	Filhol, Ann. (3), 21,
" " "	"	2.240	115.
" " "	"	2.205	Schiff, A. C. P. 108,
" " "	"	2.160, 27°	21.
" " "	"	2.160, 27°	Favre and Valson.
" " "	"	2.160, 27°	C. R. 77, 579.
" " "	"	2.219, 0°	Quinke, P. A. 135,
" " Fused	"	2.15	642.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Calcium chloride. Fused	$\text{Ca Cl}_2$ -----	2.120 -----	Quincke. P. A. 138, 141.
“ “ -----	$\text{Ca Cl}_2, 6 \text{ H}_2\text{O}$ -----	1.680, m. of 2 -----	Playfair and Joule. M. C. S. 2, 401.
“ “ -----	“ -----	1.635 -----	Filhol. Ann. (3), 21, 415.
“ “ -----	“ -----	1.612, 10° -----	Kopp. J. 8, 44.
“ “ -----	“ -----	1.701, 17° 1' -----	Favre and Valson. C. R. 77, 579.
“ “ -----	“ -----	1.654, m. of 4 -----	Schróder. Dm. 1873.
“ “ -----	“ -----	1.642 } Ex- tremes }	
“ “ -----	“ -----	1.671 } ----- }	
Strontium chloride	$\text{Sr Cl}_2$ -----	2.8033 -----	Karsten. Schw. J. 65, 394.
“ “ -----	“ -----	2.960 -----	Filhol. Ann. (3), 21, 415.
“ “ -----	“ -----	3.035, 17° 2' -----	Favre and Valson. C. R. 77, 579.
“ “ -----	“ -----	3.054 -----	Schröder. A. C. P. 174, 249.
“ “ -----	“ -----	2.770, at the melting point. -----	Braun. J. C. S. (2), 13, 31.
“ “ Fused -----	“ -----	2.770 -----	Quincke. P. A. 138, 141.
“ “ -----	$\text{Sr Cl}_2, 6 \text{ H}_2\text{O}$ -----	2.015, m. of 2 -----	Playfair and Joule. M. C. S. 2, 401.
“ “ -----	“ -----	1.603 -----	Filhol. Ann. (3), 21, 415.
“ “ -----	“ -----	1.921 -----	Buignet. J. 14, 15.
“ “ -----	“ -----	1.932, 17° 2' -----	Favre and Valson. C. R. 77, 579.
“ “ -----	“ -----	1.954 -----	Schröder. Dm. 1873.
Barium chloride	$\text{Ba Cl}_2$ -----	3.860 -----	Boullay. Ann. (2), 43, 266.
“ “ -----	“ -----	4.156 -----	
“ “ -----	“ -----	3.8 -----	Richter. Watts' Diet.
“ “ -----	“ -----	3.7037 -----	Karsten. Schw. J. 65, 394.
“ “ -----	“ -----	3.750 -----	Filhol. Ann. (3), 21, 415.
“ “ -----	“ -----	3.820 -----	Schiff. A. C. P. 108, 21.
“ “ -----	“ -----	3.872 -----	Schröder. P. A. 107, 113.
“ “ -----	“ -----	3.886 -----	
“ “ -----	“ -----	3.7, 17° 5' -----	Kremers. P. A. 85, 42.
“ “ -----	“ -----	3.844, 16° 8' -----	Favre and Valson. C. R. 77, 579.
“ “ -----	“ -----	3.92 -----	Brügelmann. Ber. 17, 2359.
“ “ Molten -----	“ -----	3.700 -----	Quincke. P. A. 138, 141.
“ “ -----	$\text{Ba Cl}_2, 2 \text{ H}_2\text{O}$ -----	3.144, m. of 2 -----	Playfair and Joule. M. C. S. 2, 401.
“ “ -----	“ -----	2.664 -----	Filhol. Ann. (3), 21, 415.
“ “ -----	“ -----	3.05435, 4° -----	Playfair and Joule. J. C. S. 1, 137.

NAME.	FORMULA	SPEC. GRAVITY.	AUTHORITY.
Barium chloride	$\text{Ba Cl}_2 \cdot 2 \text{H}_2\text{O}$	3.052	Schiff, A. C. P. 108, 21.
" "	"	3.081	Buznet, J. 14, 15.
" "	"	3.051, 157.5	Favre and Valson, C. R. 77, 579.
" "	"	3.015	Schröder, Dm. 1873.
Lead chloride	$\text{Pb Cl}_2$	5.29	Monro.
" " Native	"	5.238	Pana's Min.
" " Unfused	"	5.8022	Karsten, Schw. J. 65, 394.
" " After fusion	"	5.6824	"
" " Cryst.	"	5.802	Schabus, J. 3, 322.
" "	"	5.78	Schiff, J. 11, 11.
" "	"	5.80534, 157.503	Stollé, J. P. C. 97.
" "	"	5.88	Brugemann, Ber. 17, 2355.
Chromous chloride	$\text{Cr Cl}_2$	2.751, 14	Griffith, F. W. C.
Chromic chloride	$\text{Cr}_2\text{Cl}_6$	3.03, 173	Schafarik, J. P. C. 90, 12.
" "	"	2.757, 157, m. of 13.	Griffith, F. W. C.
Manganous chloride	$\text{Mn Cl}_2$	2.478	Schröder, A. C. P. 174, 219.
" "	$\text{Mn Cl}_2 \cdot 4 \text{H}_2\text{O}$	1.898	Schröder, Dm. 1873.
" "	"	1.913	
" "	"	1.928	
" "	"	2.01, 10	
Ferrous chloride	$\text{Fe Cl}_2$	2.528	Badeker, B. D. Z. Filhol, Ann. 3, 21, 115.
" "	"	2.988, 174.9	Griffith, F. W. C.
" "	$\text{Fe Cl}_2 \cdot 4 \text{H}_2\text{O}$	1.926	Filhol, Ann. 3, 21, 115.
" "	"	1.937	Schabus, J. 3, 327.
Ferric chloride	$\text{Fe}_2\text{Cl}_6$	2.801, 10.8	Griffith, F. W. C.
Nickel chloride	$\text{Ni Cl}_2$	2.56	Schiff, A. C. P. 108, 21.
Cobalt chloride	$\text{Co Cl}_2$	2.937, m. of 3	Playfair and Jorda, M. C. S. 2, 401.
" "	$\text{Co Cl}_2 \cdot 6 \text{H}_2\text{O}$	1.84, 132	Badeker and Ehlers, B. D. Z.
Cuprous chloride	$\text{Cu Cl}$	3.6777	Karsten, Schw. J. 65, 394.
" "	"	3.376	Playfair and Jorda, M. C. S. 2, 401.
" " Nantoquite	"	3.930	Brethaupt, J. 25, 1115.
Cupric chloride	$\text{Cu Cl}_2$	3.054	Playfair and Jorda, M. C. S. 2, 401.
" "	$\text{Cu Cl}_2 \cdot 2 \text{H}_2\text{O}$	2.545, m. of 2	"
" "	"	2.47, 18	Badeker, B. D. Z.
Boron trichloride, liq.	$\text{BCl}_3$	1.35	Wolfram and Deville, J. 10, 931.
Gadolinium chloride, Molten	$\text{Gd Cl}_3$	2.56, 80	Borslandran, C. N. 41, 196.
German chloride	$\text{Ge Cl}_4$	3.88, 152.5	Robinson, C. N. 50, 251.
Dodymium chloride	$\text{Dy Cl}_3 \cdot 6 \text{H}_2\text{O}$	2.2860	Clave, U. S. A. 1885.
" "	"	2.287	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Samarium chloride	$\text{Sm Cl}_3 \cdot 6 \text{H}_2\text{O}$	2.375	Cleve. U. N. A. 1885.
"	"	2.392	
Carbon chloride.*			
Silicon tetrachloride	$\text{Si Cl}_4$	1.52371, 0°	Pierre. Ann. (3), 20, 26.
"	"	1.5083, 5°-10°	Regnault. P. A. 62, 50.
"	"	1.4983, 10°-15°	
"	"	1.4884, 15°-20°	
"	"	1.4878, 20°	Haagen. P. A. 131, 117.
"	"	1.49276	Mendelejeff. C. R. 51, 97.
"	"	1.522, 0°	Friedel and Crafts. A. J. S. (2), 43, 162.
"	"	1.52408, 0°	Thorpe. J. C. S. 37, 372.
"	"	1.40294, 57°-57	
Silicon hexchloride	$\text{Si}_2 \text{Cl}_6$	1.58, 0°	Troost and Haute-feuille. Z. C. 14, 231.
Titanium tetrachloride	$\text{Ti Cl}_4$	1.76088, 0°	Pierre. Ann. (3), 20, 21.
"	"	1.7487, 5°-10°	Regnault. P. A. 62, 50.
"	"	1.7403, 10°-15°	
"	"	1.7322, 15°-20°	
"	"	1.76041, 0°	Thorpe. J. C. S. 37, 371.
"	"	1.52223, 136°-41	
Germanium tetrachloride	$\text{Ge Cl}_4$	1.887, 18°	Winkler. Ber. 19, ref. 655.
Tin dichloride	$\text{Sn Cl}_2 \cdot 2 \text{H}_2\text{O}$	2.759	Playfair and Joule. M. C. S. 2, 401.
"	"	2.71, 15°-5, s	Penny. J. C. S. 4, 239.
"	"	2.5876, 37°-7, 1	
"	"	2.634, 24°	Bishop. F. W. C.
Tin tetrachloride	$\text{Sn Cl}_4$	2.26712, 0°	Pierre. Ann. (3), 20, 19.
"	"	2.2618, 5°-10°	Regnault. P. A. 62, 50.
"	"	2.2492, 10°-15°	
"	"	2.2368, 15°-20°	
"	"	2.234, 15°	Gerlach. J. 18, 237.
"	"	2.2328, 20°	Haagen. P. A. 131, 117.
"	"	2.27875, 0°	Thorpe. J. C. S. 37, 372.
"	"	1.97813, 113°-89	
Nitrogen trichloride	$\text{N Cl}_3$ ?	1.653	Watts' Dictionary.
Phosphorus trichloride	$\text{P Cl}_3$	1.45	Davy. Watts' Diet.
"	"	1.61616, 0°	Pierre. Ann. (3), 20, 9.
"	"	1.6091, 5°-10°	Regnault. P. A. 62, 50.
"	"	1.6001, 10°-15°	
"	"	1.5911, 15°-20°	
"	"	1.6119, 0°, m. of 2.	Buff. A. C. P. 4
"	"	1.59708, 10°	Supp. Bd. 129.
"	"	1.47124, 76°	Boiling point, 76°.

\* The chlorides, bromides, and iodides of carbon are assigned to a special division among organic compounds.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Phosphorus trichloride	$P Cl_3$	1.5774, 20°	Haugen, P. A. 131, 117.
" "	"	1.61275, 0°	Thorpe, J. C. S. 37, 372.
Vanadium dichloride	$V Cl_2$	1.46815, 75°/95°	Rosecoe, P. T. 1869, 679.
Vanadium trichloride	$V Cl_3$	3.00, 182°, s.	" "
Vanadium tetrachloride	$V Cl_4$	1.8584, 0°	" "
" "	"	1.8533, 8°	" "
" "	"	1.8159, 32°	[15,
Arsenic trichloride	$As Cl_3$	2.20495, 0°	Pierre, Ann. (3), 20,
" "	"	2.1766	Penny and Wallace, J. 5, 382.
" "	"	2.1668, 20°	Haugen, P. A. 131, 117.
" "	"	2.20500, 0°	Thorpe, J. C. S. 37, 372.
" "	"	1.91813, 130°/21°	Cooke, Proc. Amer. Acad. 1877.
Antimony trichloride	$Sb Cl_3$	3.064, 26°, s.	" "
" "	"	2.6796, liquid	Kepp, A. C. P. 95, 348.
" "	"	2.6758, at	" "
" "	"	2.6750, 73°/2	" "
Antimony pentachloride	$Sb Cl_5$	2.3461, 20°	Haugen, P. A. 131, 117.
Bismuth trichloride	$Bi Cl_3$	4.56, 11°	Bedecker, B. D. Z.
Sulphur chloride	$S_2 Cl_2$	1.687	Dumas, Ann. (2), 49, 204.
" "	"	1.686	Marchand, J. P. C. 22, 507.
" "	"	1.6970, 55°/10°	Reynault, P. A. 62, 50.
" "	"	1.6882, 10°/15°	" "
" "	"	1.6793, 15°/20°	Kepp, A. C. P. 95, 355.
" "	"	1.7055, 0°	" "
" "	"	1.6802, 167°/7°	Haugen, P. A. 131, 117.
" "	"	1.6828, 20°	" "
" "	"	1.4818, 138°	Ramsay, J. C. S. 35, 463.
" "	"	1.70941, 0°	Thorpe, J. C. S. 37, 356.
" "	"	1.49201, 138°/12°	Divers and Shimose, Ber. 17, 896.
Selenium chloride	$Se_2 Cl_2$	2.906, 17°/5°	" "
Iodine monochloride	$I Cl$	3.263, 0°	" "
" "	"	3.222, 16°/5°	" "
" "	"	3.206, 18°/2°	" "
" "	"	3.180, 30°	" "
" "	"	3.176, 32°	" "
" "	"	3.132, 45°	" "
" "	"	3.127, 48°	" "
" "	"	3.084, 60°	Hannay, J. C. S. (2), 11, 818.
" "	"	3.032, 72°	Melts at 24°/5°.
" "	"	3.036, 75°	Boils at 100°/5 to 101°/5.
" "	"	2.988, 86°	" "
" "	"	2.984, 90°	" "
" "	"	2.964, 95°	" "
" "	"	2.958, 98°	" "
" "	"	3.48223, 0°	Thorpe, J. C. S. 37, 371.
" "	"	2.88196, 101°/3°	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Iodine trichloride-----	$I Cl_3$ -----	3.1107 -----	Christomanos. Ber. 10, 789.
Platinum dichloride ----	$Pt Cl_2$ -----	5.8696, 11° ---	Bödeker. B. D. Z.
Platinum tetrachloride---	$Pt Cl_4 \cdot 8 H_2 O$ -----	2.431, 15° ----	" "

## 2d. Double Chlorides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ammonium magnesium chloride.	$Am_2 Mg Cl_4 \cdot 6 H_2 O$	1.456, 10° ---	Bödeker. B. D. Z.
Potassium zinc chloride..	$K_2 Zn Cl_4$ -----	2.297 -----	Schiff. A. C. P. 112, 88.
Ammonium zinc chloride..	$Am_2 Zn Cl_4$ -----	1.879 -----	" "
" " " --	"-----	1.72 } 10° --- {	Bödeker and Ehlers.
" " " --	"-----	1.77 } ----- {	B. D. Z.
" " " --	"-----	1.77 -----	Romanis. C. N. 49, 273.
Barium zinc chloride ---	$Ba_2 Zn Cl_6 \cdot 4 H_2 O$	2.845 -----	Warner. C. N. 27, 271.
Potassium cadmium chloride.	$K_2 Cd Cl_4$ -----	2.500 -----	Schröder. Dm. 1873.
Strontium cadmium chloride.	$Sr Cd_2 Cl_6 \cdot 7 H_2 O$	2.708, 24°, m. of 3.	W. Knight. F.W.C.
Barium cadmium chloride	$Ba Cd Cl_4 \cdot 4 H_2 O$	2.968 -----	Topsøe. C. C. 4, 76.
" " " --	"-----	2.952, 24°.5 } ----- {	W. Knight. F.W.C.
" " " --	"-----	2.966, 25°.2 } ----- {	
Sodium mercury chloride.	$Na Hg Cl_3 \cdot 2 H_2 O$ ---	3.011 -----	Playfair and Joule. M. C. S. 2, 401.
Potassium mercury chloride.	$K Hg Cl_3 \cdot H_2 O$ ----	3.735, m. of 3.	" "
Ammonium mercury chloride.	$Am_2 Hg_2 Cl_6 \cdot H_2 O$ ---	3.822 -----	" "
" " " --	$Am_2 Hg Cl_4 \cdot H_2 O$ ---	2.938 -----	" "
Potassium iron chloride..	$K_2 Fe Cl_4 \cdot 2 H_2 O$ ---	2.162 -----	Schabus. J. 3, 327.
Potassium copper chloride	$K_2 Cu Cl_4 \cdot 2 H_2 O$ ---	2.426 -----	Playfair and Joule. M. C. S. 2, 401.
" " " --	"-----	2.400 -----	Schiff. A. C. P. 112, 88.
" " " --	"-----	2.359 -----	Kopp. J. 11, 10.
" " " --	"-----	2.410 -----	Tschermak. S. W. A. 45, 603.
" " " --	"-----	2.358 -----	Schröder. Dm. 1873.
" " " --	"-----	2.392 -----	
" " " --	"-----	2.425 -----	
Rubidium copper chloride	$Rb_2 Cu Cl_4 \cdot 2 H_2 O$ ---	2.895 -----	Wyrouboff. B. S. M. 10, 127.
Ammonium copper chloride.	$Am_2 Cu Cl_4 \cdot 2 H_2 O$ ---	2.018 -----	Playfair and Joule. M. C. S. 2, 401.
" " " --	"-----	1.963 -----	Schiff. A. C. P. 112, 88.
" " " --	"-----	1.977 -----	Kopp. J. 11, 10.
" " " --	"-----	2.066 -----	Tschermak. S. W. A. 45, 603.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ammonium copper chloride.	$\text{Am}_2 \text{Cu Cl}_4 \cdot 2 \text{H}_2 \text{O}$	1.984, 24°	Evans. F. W. C.
Potassium palladiochloride.	$\text{K}_2 \text{Pd Cl}_6$	2.806	Topsoë. C. C. 4, 76.
Ammonium palladiochloride.	$\text{Am}_2 \text{Pd Cl}_6$	2.418	" "
Magnesium palladiochloride.	$\text{Mg Pd Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.124	" "
Zinc palladiochloride	$\text{Zn Pd Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.359	" "
Nickel palladiochloride	$\text{Ni Pd Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.353	" "
Potassium iridichloride	$\text{K}_2 \text{Ir Cl}_6$	3.546, 15°	Bodeker. B. D. Z.
Ammonium iridichloride	$\text{Am}_2 \text{Ir Cl}_6$	2.856, 15°	" "
Potassium platinochloride	$\text{K}_2 \text{Pt Cl}_4$	3.2056, 20°; 3 } 3.2009, 21° }	Clarke. A. J. S. (3), 46, 206.
Ammonium platinochloride.	$\text{Am}_2 \text{Pt Cl}_4$	2.84	Romanis. C. N. 49, 273.
Sodium platinchloride.	$\text{Na}_2 \text{Pt Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.500	Topsoë. C. C. 4, 76.
Potassium platinchloride	$\text{K}_2 \text{Pt Cl}_2$	3.586, 15°	Bodeker. B. D. Z.
" "	"	3.694	Tschermak. S. W. A. 45, 603.
" "	"	3.3, 17°	Pettersson. U. N. A. 1874.
" "	"	3.32, 17°; 2 }	Schröder. Dm. 1873.
" "	"	3.344	Pettersson. U. N. A. 1874.
Rubidium platinchloride	$\text{Rb}_2 \text{Pt Cl}_6$	3.96, 17°; 4 }	
" "	"	3.94, 17°; 5 }	
Ammonium platinchloride.	$\text{Am}_2 \text{Pt Cl}_6$	2.955 } 3.009 } 15°	Bodeker. B. D. Z.
" "	"	2.960	Tschermak. S. W. A. 45, 603.
" "	"	3.0, 17°; 2	Pettersson. U. N. A. 1874.
" "	"	2.936	Schröder. Dm. 1873.
" "	"	3.065	Topsoë. C. C. 4, 76.
Thallium platinchloride.	$\text{Tl}_2 \text{Pt Cl}_6$	5.76, 17°	Pettersson. U. N. A. 1874.
Magnesium platinchloride.	$\text{Mg Pt Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.437	Topsoë. C. C. 4, 76.
" "	$\text{Mg Pt Cl}_6 \cdot 12 \text{H}_2 \text{O}$	2.060	" "
Cadmium platinchloride	$\text{Cd Pt Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.882	" "
Barium platinchloride	$\text{Ba Pt Cl}_6 \cdot 4 \text{H}_2 \text{O}$	2.868	" "
Lead platinchloride	$\text{Pb Pt Cl}_6 \cdot 3 \text{H}_2 \text{O}$	3.684	" "
Manganese platinchloride	$\text{Mn Pt Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.692	" "
" "	$\text{Mn Pt Cl}_6 \cdot 12 \text{H}_2 \text{O}$	2.112	" "
Iron platinchloride	$\text{Fe Pt Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.714	" "
Copper platinchloride	$\text{Cu Pt Cl}_6 \cdot 6 \text{H}_2 \text{O}$	2.734	" "
Didymium platinchloride	$\text{Di Pt Cl}_7 \cdot 10\frac{1}{2} \text{H}_2 \text{O}$	2.683 } 2.696 } 21°; 2	Cleve. U. N. A. 1885.
Samarium platinchloride	$\text{Sm Pt Cl}_7 \cdot 10\frac{1}{2} \text{H}_2 \text{O}$	2.709 } 2.714 } 21°; 8	" "
Didymium aurichloride	$\text{Di Au Cl}_6 \cdot 10 \text{H}_2 \text{O}$	2.662 } 2.664 } 18°	" "
Samarium aurichloride	$\text{Sm Au Cl}_6 \cdot 10 \text{H}_2 \text{O}$	2.739 } 2.744 } 162°; 5	" "
Potassium stannochloride	$\text{K}_2 \text{Sn Cl}_4 \cdot 3 \text{H}_2 \text{O}$	2.514	Playfair and Joule. M. C. S. 2, 401
Ammonium stannochloride.	$\text{Am}_2 \text{Sn Cl}_4 \cdot 3 \text{H}_2 \text{O}$	2.404	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium stannichloride.	$K_2 Sn Cl_6$ -----	2.686 }-----	Schröder. Dm. 1873.
" "-----	"-----	2.688 }-----	
" "-----	"-----	2.700-----	Joergensen.
" "-----	"-----	2.948-----	Romanis. C. N. 49, 273.
Cæsium stannichloride-----	$Cs_2 Sn Cl_6$ -----	3.3308, 20°.5-----	Stolba. D. J. 198, 225.
Ammonium stannichloride.	$Am_2 Sn Cl_6$ -----	2.387, m. of 4 }-----	Schröder. Dm. 1873.
" "-----	"-----	2.381 } Ex-	
" "-----	"-----	2.396 } tremes.	
" "-----	"-----	2.511-----	
Magnesium stannichloride.	$Mg Sn Cl_6 \cdot 6 H_2 O$ -----	2.080-----	Topsoë and Christiansen.
Potassium antimony chloride.	$K_3 Sb Cl_6 \cdot 2 H_2 O$ -----	2.42-----	Romanis. C. N. 49, 273.

## 3d. Oxy- and Sulpho-Chlorides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Matlockite-----	$Pb_2 O Cl_2$ -----	7.21-----	Greg. J. 4, 821.
Mendipite-----	$Pb_3 O_2 Cl_2$ -----	7.0—7.1-----	Dana's Mineralogy.
Atacamite-----	$Cu_2 Cl (O H)_3$ -----	3.898-----	Zepharovich. J. 24, 1186.
"-----	"-----	3.757-----	Tschernak. J. 26, 1201.
"-----	"-----	3.7688-----	Zepharovich. J. 26, 1201.
Botallackite-----	$Cu_4 Cl_2 (O H)_6 \cdot 3 H_2 O$ -----	3.6-----	Church. J. C. S. 18, 213.
Tallingite-----	$Cu_5 Cl_2 (O H)_8$ -----	3.5-----	Church. J. C. S. 18, 78.
Mercuric oxychloride-----	$Hg_2 O_2 Cl_2$ -----	8.63-----	Blaas. Z. K. M. 5, 283.
Didymium oxychloride-----	$Di O Cl$ -----	5.725 }-----	Cleve. U. N. A. 1885.
" "-----	"-----	5.735 } 21°.2-----	
" "-----	"-----	5.793, 21°.5-----	
Samarium oxychloride-----	$Sm O Cl$ -----	6.987 }-----	
" "-----	"-----	7.047 } 21°-----	" "
Nitroxyl chloride-----	$N O_2 Cl$ -----	1.3677, 8°-----	Baudrimont. J. P. C. 31, 478.
" "-----	"-----	1.32, 14°-----	Müller. A. C. P. 122, 1.
Phosphorus oxychloride-----	$P O Cl_3$ -----	1.673, 14°-----	Cahours. J. P. C. 45, 129.
" "-----	"-----	1.70, 12°-----	Wurtz. J. 1, 365.
" "-----	"-----	1.662, 19°.5-----	Mendelejeff. J. 13, 7.
" "-----	"-----	1.69371, 10°-----	Buff. A. C. P. 4 Supp. Bd., 129.
" "-----	"-----	1.69106, 14°-----	
" "-----	"-----	1.68626, 15°-----	
" "-----	"-----	1.64945, 51°-----	
" "-----	"-----	1.509116, 110°-----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Phosphorus oxychloride	$P_2O_5Cl_3$	1.96	Wichelhaus, J. 20, 149.
"	"	1.71163, 0°	(Thorpe, J. C. S. [37, 337].
"	"	1.50967, 107.23°	(37, 337.
"	"	1.5112, 106.7°	Schall, Ber. 17, 2204.
Pyrophosphoric chloride	$P_2O_5Cl_4$	1.58, 7°	Genther and Michaelis, B. S. C. 16, 231.
Vanadyl dichloride	$VO_2Cl_2$	2.88, 137.8°	Roscoe, P. T. 1868, 1.
Vanadyl trichloride	$VO_2Cl_3$	1.761, 29°	Schafarik, J. P. C. 76, 142.
"	"	1.841, 111.5°	(Roscoe, P. T. 1868, 1.
"	"	1.839, 173.5°	(Roscoe, P. T. 1868, 1.
"	"	1.828, 213°	(Roscoe, P. T. 1868, 1.
"	"	1.86534, 0°	(Thorpe, J. C. S. [37, 348].
"	"	1.63073, 127.19°	(Thorpe, J. C. S. [37, 348].
"	"	1.854, 18°	L'Hôte, C. R. 101, 1151.
Antimony oxychloride	$Sb_4O_5Cl_2$	5.014, s.	Cooke, Proc. Am. Acad. 1877.
Bismuth oxychloride	$Bi_2O_3Cl$	7.2, 20° s.	Muir, Hoffmeister, and Robbs, J. C. S. 39, 37. [922.
Daulbreite	$Bi_2O_3Cl_3$	6.4-6.5	Domeyko, C. R. 82.
Sulphur oxychloride	$S_2O_2Cl_2$	1.656, 0°	Ogier, Ber. 15, 922.
Thioacyl chloride	$S_2O_2Cl_2$	1.675, 0°	Wurtz, J. P. C. 39, 255.
"	"	1.67673, 0°	(Thorpe, J. C. S. [37, 351].
"	"	1.52143, 78.8°	(Thorpe, J. C. S. [37, 351].
"	"	1.5551, 107.4°	Nasini, Ber. 9, 324.
Sulphuryl chloride	$SO_2Cl_2$	1.661, 21°	Behrends, J. 30, 219.
"	"	1.70814, 0°	(Thorpe, J. C. S. [37, 359].
"	"	1.56025, 69.95°	(Thorpe, J. C. S. [37, 359].
Disulphuryl chloride	$S_2O_3Cl_2$	1.818, 16°	H. Rose, P. A. 44, 291. [121.
"	"	1.792	Rosenstiehl, J. 14, 1827, 159.
"	"	1.849, 18°	Michaelis, Z. C. 43, 160.
"	"	1.85846, 0°	(Thorpe, J. C. S. [37, 360].
"	"	1.6040, 139.59°	(Thorpe, J. C. S. [37, 360].
Chloro-sulphonic acid	$SO_2(OH)Cl$	1.78474, 0°	(Thorpe, J. C. S. [37, 358].
"	"	1.54874, 155.3°	(Thorpe, J. C. S. [37, 358].
"	"	1.7633, 14°	Nasini, Ber. 9, 324.
Selenyl chloride	$SeO_2Cl_2$	2.46	Weber, J. 12, 91.
"	"	2.443, 13°	Michaelis, Z. C. 43, 160.
Chromyl dichloride	$CrO_2Cl_2$	1.9134, 10°	Thomson, P. T. 1827, 159.
"	"	1.71, 21°	Walter, Ann. 124, 66, 387.
"	"	1.92, 25°	Thorpe, J. 21, 226.
"	"	1.7538, 117°	Ramsay, J. C. S. 35, 163.
"	"	1.96104, 0°	(Thorpe, J. C. S. [37, 372]. [115.
"	"	1.75780, 115.9°	(Thorpe, J. C. S. [37, 372]. [115.
Phosphorus sulphochloride	$PS_2Cl_3$	1.631, 22°	Baudrimont, J. 14, 166820, 0°
"	"	1.66820, 0°	(Thorpe, J. C. S. [37, 341].
"	"	1.45599, 125.12°	(Thorpe, J. C. S. [37, 341].

## IV. INORGANIC BROMIDES.

## 1st. Simple Bromides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lithium bromide-----	Li Br-----	3.102, 17°----	Clarke. A. J. S. (3), 13, 293.
Sodium bromide-----	Na Br-----	2.952-----	Schiff. A. C. P. 108, 21.
“ “-----	“-----	3.079, 17°.5----	Kremers. J. 10, 67.
“ “-----	“-----	3.011-----	Tschermak. S. W. A. 45, 603.
“ “-----	“-----	3.198, 17°.3----	Favre and Valson. C. R. 77, 579.
“ “ Fused-----	“-----	2.448-----	Quineke. P. A. 138, 141.
“ “-----	Na Br. 4 H <sub>2</sub> O-----	2.34-----	Playfair and Joule. M. C. S. 2, 401.
“ “-----	“-----	2.165, 16°.8----	Favre and Valson. C. R. 77, 579.
Potassium bromide-----	K Br-----	2.415-----	Karsten. Schw. J. 65, 394.
“ “-----	“-----	2.672-----	Playfair and Joule. M. C. S. 2, 401.
“ “-----	“-----	2.690, m. of 6----	Schröder. P. A. 106, 226.
“ “-----	“-----	2.712, 12°.7----	Beamer. F. W. C.
“ “ Fused-----	“-----	2.199-----	Quineke. P. A. 138, 141.
“ “ Not pressed-----	“-----	2.505-----	} 18°---- Spring. Ber. 16, 2724.
“ “ Once “-----	“-----	2.704-----	
“ “ Twice “-----	“-----	2.700-----	
Rubidium bromide-----	Rb Br-----	3.358-----	Setterberg. Of. Ak. St. 1882, 6, 23.
Cæsium bromide-----	Cs Br-----	4.463-----	“-----
Ammonium bromide-----	Am Br-----	2.379-----	Schröder. P. A. 106, 226.
“ “-----	“-----	2.266, 10°-----	Bödeker. B. D. Z.
“ “ Cryst.-----	“-----	2.327-----	}----- Eder. Ber. 14, 511.
“ “ Sublimed-----	“-----	2.3394-----	
“ “-----	“-----	2.456-----	Stas. Mem. Acad. Belg. 43, 1.
Silver bromide-----	Ag Br-----	6.3534-----	Karsten. Schw. J. 65, 394.
“ “-----	“-----	6.425, m. of 7----	Schröder. P. A. 106, 226.
“ “-----	“-----	6.215, 17°-----	Clarke. A. J. S. (3), 13, 294.
“ “-----	“-----	6.245, 0°-----	} Rodwell. P. T. 1882, 1125.
“ “ Molten-----	“-----	5.595, 427°-----	
“ “-----	“-----	6.2-----	Quineke. P. A. 138, 141.
Thallium bromide. Precip.-----	Tl Br-----	7.540, 21°.7-----	} Keck. F. W. C.
“ “ After fusion.-----	“-----	7.557, 17°.3-----	
Zinc bromide-----	Zn Br <sub>2</sub> -----	3.643, 10°-----	Bödeker. B. D. Z.
Cadmium bromide-----	Cd Br <sub>2</sub> -----	4.712-----	} 14°---- Bödeker and Gies- secke. B. D. Z.
“ “-----	“-----	4.910-----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cadmium bromide	Cd Br <sub>2</sub>	4.794, 19°.	Knight, F. W. C.
Mercurous bromide	Hg Br	7.307	Karsten, Schw. J. 65, 394.
Mercuric bromide	Hg Br <sub>2</sub>	5.9202	" "
" "	"	5.7298, 16°	" "
" "	"	5.7461, 18°	Benner, F. W. C.
Calcium bromide	Ca Br <sub>2</sub>	3.32, 11°	Bodeker, B. D. Z.
Strontium bromide	Sr Br <sub>2</sub>	3.662, 12°	" "
" "	"	3.985, 20°.	Fayre and Valson, C. R. 77, 579.
" "	Sr Br <sub>2</sub> · 6 H <sub>2</sub> O	2.358, 18°	" "
Barium bromide	Ba Br <sub>2</sub>	4.23	Schiff, A. C. P. 108, 21.
" "	Ba Br <sub>2</sub> · 2 H <sub>2</sub> O	3.690	" "
" " Cryst.	"	3.710	" "
" " Pulv.	"	3.588	Schröder, Den. 1873.
" "	"	3.679, 21°.	Harper, F. W. C.
Lead bromide	Pb Br <sub>2</sub>	6.302	Karsten, Schw. J. 65, 394.
" "	"	6.611, 17°.	Kremers, J. 5, 397.
" " Ppt.	"	6.572, 19°.	Keck, F. W. C.
Cuprous bromide	Cu Br	4.72, 12°	Bodeker, B. D. Z.
Boron tribromide	B Br <sub>3</sub>	2.69, 1	Wohler and Deville, J. 10, 94.
Aluminum bromide	Al Br <sub>3</sub>	2.51	Dewille and Troost, J. 12, 26.
Didymium bromide	Di Br <sub>3</sub> · 6 H <sub>2</sub> O	2.803, 20°.	Cleve, U. N. A. 1885.
" "	"	2.817	" "
Samarium bromide	Sm Br <sub>3</sub> · 6 H <sub>2</sub> O	2.969, 21°.	" "
" "	"	2.973	" "
Silicon tetrabromide	Si Br <sub>4</sub>	2.8128, 0°	Pierre, Ann. (3), 20, 28.
Titanium tetrabromide	Ti Br <sub>4</sub>	2.6	Duppa, J. 9, 365.
Tin dibromide	Sn Br <sub>2</sub>	5.117, 17°	Raymann and Preis, A. C. P. 223, 323.
Tin tetrabromide	Sn Br <sub>4</sub>	3.322, 39°.	Bodeker, B. D. Z.
" "	"	3.349, 35°	Raymann and Preis, A. C. P. 223, 323.
Phosphorus tribromide	P Br <sub>3</sub>	2.92489, 0°	Pierre, Ann. (3), 20, 11.
" "	"	2.92344, 0	" "
" "	"	2.49541, 172°.	Thorpe, J. C. S. 37, 335.
Arsenic tribromide	As Br <sub>3</sub>	3.96, 15°	Bodeker, B. D. Z.
Antimony tribromide	Sb Br <sub>3</sub>	3.641, 90°.	Kopp, A. C. P. 95, 352.
" "	"	3.473, 96°.	Mac Iver, C. N. 29, 179.
" "	"	4.118, 23°.	Cooke, Proc. Am. Acad. 1877.
Bismuth tribromide	Bi Br <sub>3</sub>	5.6041	Bodeker, B. D. Z.
" "	"	5.4, 20°	Muir, Hoffmeister, and Robbs, J. C. S. 39, 37.
Sulphur bromide	S <sub>2</sub> Br <sub>2</sub>	2.628, 4	Hannay, J. C. S. 33, 288.
Selenium bromide	Se <sub>2</sub> Br <sub>2</sub>	3.604, 15°	Schneider, P. A. 128, 327.

## 2d. Double, Oxy-, and Sulpho-Bromides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ammonium zinc bromide	$\text{Am}_2 \text{Zn Br}_4$ -----	2.625, 13° ----	Bödeker. B. D. Z.
Barium cadmium bromide	$\text{Ba Cd Br}_4 \cdot 4 \text{H}_2 \text{O}$ --	3.687 -----	Topsoë. C. C. 4, 76.
" " " "	" " " " -----	3.665, 24° ----	Harper. F. W. C.
Hydrogen mercury bromide.	$\text{H Hg Br}_3 \cdot 4 \text{H}_2 \text{O}$ --	3.17, fused ---	Thomsen. J. P. C. (2), 11, 283.
Potassium mercury bromide.	$\text{K Hg Br}_3$ -----	4.410, m. of 3.	Beamer. F. W. C.
" " " "	$\text{K Hg Br}_3 \cdot \text{H}_2 \text{O}$ ----	3.865, 22° ----	" "
Potassium stannibromide.	$\text{K}_2 \text{Sn Br}_6$ -----	3.783 -----	Topsoë. C. C. 4, 76.
Ammonium stannibromide.	$\text{Am}_2 \text{Sn Br}_6$ -----	3.505 -----	" "
Sodium platinbromide ---	$\text{Na}_2 \text{Pt Br}_6 \cdot 6 \text{H}_2 \text{O}$ --	3.323 -----	" "
Potassium platinbromide	$\text{K}_2 \text{Pt Br}_6$ -----	4.68, 14° ----	Bödeker. B. D. Z.
" " " "	" " " " -----	4.541 -----	Topsoë. C. C. 4, 76.
Ammonium platinbromide	$\text{Am}_2 \text{Pt Br}_6$ -----	4.200 -----	" "
Magnesium platinbromide	$\text{Mg Pt Br}_6 \cdot 12 \text{H}_2 \text{O}$ --	2.802 -----	" "
Zinc platinbromide -----	$\text{Zn Pt Br}_6 \cdot 12 \text{H}_2 \text{O}$ --	2.877 -----	" "
Strontium platinbromide.	$\text{Sr Pt Br}_6 \cdot 9 \text{H}_2 \text{O}$ --	2.923 -----	" "
Barium platinbromide ---	$\text{Ba Pt Br}_6 \cdot 10 \text{H}_2 \text{O}$ --	3.713 -----	" "
Lead platinbromide -----	$\text{Pb Pt Br}_6$ -----	6.025 -----	" "
Manganese platinbromide	$\text{Mn Pt Br}_6 \cdot 12 \text{H}_2 \text{O}$ --	2.759 -----	" "
Nickel platinbromide -----	$\text{Ni Pt Br}_6 \cdot 6 \text{H}_2 \text{O}$ --	3.715 -----	" "
Cobalt platinbromide -----	$\text{Co Pt Br}_6 \cdot 12 \text{H}_2 \text{O}$ --	2.762 -----	Two samples. Topsoë. C. C. 4, 76
" " " "	" " " " -----	2.634 -----	
Didymium auribromide ---	$\text{Di Au Br}_6 \cdot 10 \text{H}_2 \text{O}$ --	3.297 } 21° 2	
" " " "	" " " " -----	3.311 } -----	Cleve. U.N.A. 1885.
Samarium auribromide -----	$\text{Sm Au Br}_6 \cdot 10 \text{H}_2 \text{O}$ --	3.383 } 21° 2	
" " " "	" " " " -----	3.398 } -----	
Nitrosyl tribromide -----	$\text{N O Br}_3$ -----	2.628, 22° 6	Landolt. J. 13, 104.
Phosphoryl tribromide -----	$\text{P O Br}_3$ -----	2.822 -----	Ritter. J. 8, 301.
Vanadyl tribromide -----	$\text{V O Br}_3$ -----	2.9673, 0° -- }	Roscoe. A. C. P. 8
" " " "	" " " " -----	2.9325, 14° 5 }	Supp. Bd. 95.
Bismuth oxybromide -----	$\text{Bi O Br}$ -----	6.70, 20° ----	Muir, Hoffmeister, and Robbs. J. C. S. 39, 37.
Phosphorus sulphobromide.	$\text{P S Br}_3$ -----	2.85, 17° ----	Michaelis. A. C. P. 164, 9.
" " " "	" " " " -----	2.87 -----	Mac Ivor. C. N. 29, 116.
" " " "	$\text{P S Br}_3 \cdot \text{H}_2 \text{O}$ -----	2.7937, 18° ----	Michaelis. A. C. P. 164, 9.
" " " "	$\text{P}_2 \text{S}_3 \text{Br}_4$ -----	2.2621, 17° ----	" "
Arsenic sulphobromide -----	$\text{As S}_2 \text{Br}_3$ -----	2.789 -----	Hannay. J. C. S. 33, 291.

## V. INORGANIC IODIDES.

## 1st. Simple Iodides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lithium iodide	Li I	3.485, 23°	Clarke, A. J. S. (3), 13, 293.
Sodium iodide	Na I	3.450	Filhol, Ann. (3), 21, 415.
" "	"	3.654, 18°-2	Favre and Valson, C. R. 77, 579.
" "	Na I, 4 H <sub>2</sub> O	2.448, 20°-8	" "
Potassium iodide	K I	3.978	Boullay, Ann. (2), 43, 266.
" "	"	3.104	"
" "	"	2.9084	Karsten, Schw. J. 65, 394.
" "	"	3.059	Playfair and Jenle, M. C. S. 2, 401.
" "	"	3.055	Filhol, Ann. (3), 21, 415.
" "	"	2.850	Schiff, A. C. P. 108, 21.
" "	"	2.970	Buignet, J. 14, 15.
" "	"	3.081	Schroder, P. A. 106, 226.
" "	"	3.074	"
" "	"	2.497 at the melting p. t.	Braun, J. C. S. (2), 13, 31.
" " Fused	"	2.497	Quinke, P. A. 138, 141.
" " Not pressed	"	3.012, 20°	Spring, Ber. 15, 2724.
" " Once "	"	3.110, 22°	
" " Twice "	"	3.112, 20°	
Potassium triiodide	K I <sub>3</sub>	3.498	Johnson, C. N. 34, 256.
Rubidium iodide	Rb I	3.567	Setterberg, Of. Ak. St. 1882, 6, 23.
Cesium iodide	Cs I	4.537	" "
Ammonium iodide	Am I	2.498, 11°	Bodeker, B. D. Z.
" "	"	2.445	Schroder, Dm. 1873.
Ammonium triiodide	Am I <sub>3</sub>	3.749	Johnson, C. N. 37, 246.
Iodammonium iodide	N H <sub>3</sub> I <sub>2</sub>	2.46, 15°	Seamon, C. N. 44, 189.
Silver iodide	Ag I	5.614	Boullay, Ann. (2), 43, 266.
" "	"	5.0262	Karsten, Schw. J. 65, 394.
" "	"	5.500	Filhol, Ann. (3), 21, 415.
" "	"	5.35	Schiff, A. C. P. 108, 21.
" "	"	5.650	Schroder, P. A. 106, 226.
" "	"	5.718	
" " Cryst.	"	5.669, 14°	Damour, Quoted, C. R. 64, 314.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silver iodide. Cryst. -----	Ag I -----	5.470 } 0°	H. St. Claire Deville. P. A. 132, 307. C. R. 64, 325. Fizeau. Rodwell. P. T. 1882, 1125. Breithaupt. Dana's Min. Domeyko. Dana's Min. Damour. J. 7, 870. J. L. Smith. J. 7, 870. Damour. Quoted, C. R. 64, 314.
" " " -----	" -----	5.544 } 0°	
" " After fusion -----	" -----	5.687 -----	
" " Precipitated -----	" -----	5.807, 0° -----	
" " Ppt compressed. -----	" -----	5.569 -----	
" " After rep. fusion. -----	" -----	5.675, 0° -----	
" " After one fusion. -----	" -----	5.660, 0° -----	
" " From Ag in H I. -----	" -----	5.812, 0° -----	
" " Ppt. after fusion. -----	" -----	5.681, 0° -----	
" " At max. density. -----	" -----	5.771, 163° -----	
" " At min. density. -----	" -----	5.673, -----	Breithaupt. Dana's Min. Domeyko. Dana's Min. Damour. J. 7, 870. J. L. Smith. J. 7, 870. Damour. Quoted, C. R. 64, 314.
" " Molten -----	" -----	5.522, 527° -----	
" " Iodyrite -----	" -----	5.64—5.67 -----	
" " " -----	" -----	5.504 -----	
" " " -----	" -----	5.707 -----	
" " " -----	" -----	5.366 -----	
" " " -----	" -----	5.677, 14° -----	
Thallium iodide. Precip. -----	Tl I -----	7.072, 15° 5' -----	
" " Cast -----	" -----	7.0975, 14° 7' -----	
Zinc iodide -----	Zn I <sub>2</sub> -----	4.696, 10° -----	Bödeker and Giesecke. B. D. Z. Kebler. F. W. C. Kebler. A. C. J. 5, 235. Six samples, prepared by different methods. Temperatures of weighing, 10° 5' to 20° 4'. Twitchell. A. C. J. 5, 235. Bödeker. B. D. Z. Kebler. A. C. J. 5, 235. Two lots, 14° to 15° 4'. Twitchell. A. C. J. 5, 235.
" " -----	" -----	4.666, 14° 2' -----	
Cadmium iodide. <i>a</i> variety. -----	Cd I <sub>2</sub> -----	5.543, m. of 8 -----	
" " " -----	" -----	5.622, m. of 8 -----	
" " " -----	" -----	5.660, m. of 7 -----	
" " " -----	" -----	5.729, m. of 6 -----	
" " " -----	" -----	5.610, m. of 3 -----	
" " " -----	" -----	5.675, m. of 4 -----	
" " " -----	" -----	5.701, m. of 4 -----	
" " <i>β</i> variety. -----	" -----	4.576, 10° -----	
" " " -----	" -----	4.612, m. of 7 -----	Boullay. Ann. (2), 43, 266. Karsten. Schw. J. 65, 394. Boullay. Ann. (2), 43, 266. Karsten. Schw. J. 65, 394. Filhol. Ann. (3), 21, 415. Schiff. A. C. P. 108, 21. Tschermak. S. W. A. 45, 603. Owens. F. W. C. Rodwell and Elder. P. T. 1882, 1143.
" " " -----	" -----	4.596, m. of 7 -----	
" " " -----	" -----	4.688, m. of 5 -----	
Mercurous iodide -----	Hg I -----	7.75 -----	
" " -----	" -----	7.6445 -----	
Mercuric iodide -----	Hg I <sub>2</sub> -----	6.32 -----	
" " -----	" -----	6.2009 -----	
" " -----	" -----	6.250 -----	
" " -----	" -----	5.91 -----	
" " -----	" -----	6.27 -----	
" " Red -----	" -----	6.231, m. of 7 -----	Rodwell and Elder. P. T. 1882, 1143.
" " " -----	" -----	6.2941 -----	
" " " -----	" -----	6.3004 } 0°	
" " " -----	" -----	6.276, 126° -----	
" " Yellow -----	" -----	6.225, 126° -----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Mercuric iodide, Solid	Hg I <sub>2</sub>	6.179, 200°	Rodwell and Elder.
" " Molten	"	5.286, 200°	P. T. 1882, 1143.
Strontium iodide	Sr I <sub>2</sub>	4.415, 10°	Bodeker, B. D. Z.
Barium iodide	Ba I <sub>2</sub>	4.917	Filhol, Ann. (3), 21, 415.
" " "	Ba I <sub>2</sub> · 7 H <sub>2</sub> O	2.673, 20°/3	Leonard, F. W. C.
Lead iodide	Pb I <sub>2</sub>	6.11	Boullay, Ann. (2), 43, 266.
" " "	"	6.0212	Karsten, Schw. J., 65, 394.
" " "	"	6.384	Filhol, Ann. (3), 21, 415.
" " "	"	6.07	Schiff, A. C. P., 108, 21.
" " "	"	6.207	Schroder, P. A., 107, 113.
" " "	"	6.12	Rodwell, P. T. 1882,
" " Molten	"	5.6247, 383°	1144.
Iron iodide	Fe I <sub>2</sub> · 4 H <sub>2</sub> O	2.873, 12°	Bodeker, B. D. Z.
Cuprous iodide	Cu I	4.410	Schiff, A. C. P., 108, 21.
" " "	"	5.6996	Rodwell, P. T. 1882, 1153.
Aluminum iodide	Al I <sub>3</sub>	2.63	Deville and Troost, J. 12, 26.
Tin tetriodide	Sn I <sub>4</sub>	4.696, 11°	Bodeker, B. D. Z.
Arsenic triiodide	As I <sub>3</sub>	4.39, 13°	" "
" " "	"	4.374	Schroder, Dm. 1873.
Arsenic pentiodide	As I <sub>5</sub>	3.93, approx.	Sloan, C. N. 46, 194.
Antimony triiodide	Sb I <sub>3</sub>	5.01, 10°	Bodeker, B. D. Z.
" " "	"	4.676	Schroder, Dm. 1873.
" " Hexagonal	"	4.818, 21°, m. of 5.	Cooke, Proc. Am. Acad. 1877.
" " Monoclinic	"	4.768, 22°, m. of 2.	
Bismuth triiodide	Bi I <sub>3</sub>	5.652, 10°	Bodeker, B. D. Z.
" " "	"	5.544, 18°/4	Kehler, A. C. J. 5, 235.
" " "	"	5.64	Gott and Muir, J. C. S. 53, 137.
" " "	"	5.65	

## 2d. Double and Oxy-Iodides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium cadmium iodide	K <sub>2</sub> Cd I <sub>6</sub> · 2 H <sub>2</sub> O	3.359, m. of 4.	Leonard, F. W. C.
Potassium mercury iodide	K <sub>2</sub> Hg <sub>2</sub> I <sub>6</sub> · 3 H <sub>2</sub> O	4.254, 22°	Owens, F. W. C.
" " "	"	4.289, 23°/5	
Silver mercury iodide	2 Ag I, Hg I <sub>2</sub>	5.9984, 0°	Bellati and Roman- ese, Bei. 5, 179.
" " "	3 Ag I, Hg I <sub>2</sub>	5.9302, 0°	" "
Copper mercury iodide	2 Cu I, Hg I <sub>2</sub>	6.0956, 0°	" "
" " "	2 Cu I, 2 Hg I <sub>2</sub>	6.1507, 14°	Heighway, F. W. C.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silver copper iodide-----	2 Cu I. Ag I-----	5.7302-----	Rodwell. P. T. 1882, 1160.
" " "-----	2 Cu I. 2 Ag I-----	5.7225-----	" "
" " "-----	2 Cu I. 3 Ag I-----	5.7160-----	" "
" " "-----	2 Cu I. 4 Ag I-----	5.7064-----	" "
" " "-----	2 Cu I. 12 Ag I-----	5.6950-----	" "
Silver lead iodide-----	Pb I <sub>2</sub> . Ag I-----	5.923, 0°-----	" "
Sodium platiniodide-----	Na <sub>2</sub> Pt I <sub>6</sub> . 6 H <sub>2</sub> O-----	3.707-----	Topsoë. C. C. 4, 76.
Potassium platiniodide-----	K <sub>2</sub> Pt I <sub>6</sub> -----	5.154 }-----	Bödeker. B. D. Z.
" "-----	"-----	5.198 }-----	
" "-----	"-----	5.031 }-----	
Ammonium platiniodide-----	Am <sub>2</sub> Pt I <sub>6</sub> -----	4.610-----	Topsoë. C. C. 4, 76.
Magnesium platiniodide-----	Mg Pt I <sub>6</sub> . 9 H <sub>2</sub> O-----	3.458-----	" "
Zinc platiniodide-----	Zn Pt I <sub>6</sub> . 9 H <sub>2</sub> O-----	3.689-----	" "
Manganese platiniodide-----	Mn Pt I <sub>6</sub> . 9 H <sub>2</sub> O-----	3.604-----	" "
Iron platiniodide-----	Fe Pt I <sub>6</sub> . 9 H <sub>2</sub> O-----	3.455-----	" "
Nickel platiniodide-----	Ni Pt I <sub>6</sub> . 6 H <sub>2</sub> O-----	3.976-----	" "
" "-----	Ni Pt I <sub>6</sub> . 9 H <sub>2</sub> O-----	3.549-----	" "
Cobalt platiniodide-----	Co Pt I <sub>6</sub> . 9 H <sub>2</sub> O-----	3.618-----	" "
" "-----	Co Pt I <sub>6</sub> . 12 H <sub>2</sub> O-----	3.048-----	" "
Schwartzembergite-----	Pb <sub>3</sub> I <sub>2</sub> O <sub>2</sub> -----	6.3-----	Liebe. J. 20, 1008.
"-----	"-----	5.7-----	Schwartzemberg. Dana's Min.
Lead oxyiodide-----	Pb <sub>11</sub> I <sub>4</sub> O <sub>10</sub> -----	7.81-----	Cross and Sugiura. J. C. S. 33, 406.

## VI. CHLOROBROMIDES, CHLORIODIDES, AND BROMIODIDES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Embolite-----	Ag (Cl Br)-----	5.31—5.43-----	Domeyko. Dana's Min.
"-----	"-----	5.806-----	Breithaupt. J. 2, 781.
" (Cl <sub>3</sub> Br <sub>2</sub> )-----	"-----	5.53-----	Yorke. J. C. S. 4, 150.
Lead chlorobromide-----	Pb Cl Br-----	5.741-----	Hes. A. C. J. 3, 52.
Silicon chlorobromide-----	Si Cl Br <sub>3</sub> -----	2.432-----	Reynolds. C. N. 55, 223.
Tin chlorobromide-----	Sn Cl Br <sub>3</sub> -----	3.349, 35°-----	Reis and Raymann. J. C. S. 44, 424.
Phosphorus oxychlorobromide.	P O Cl <sub>2</sub> Br-----	2.059, 0°-----	Menschutkin. J. P. C. 98, 485.
" "-----	"-----	2.12065, 0°-----	Thorpe. J. C. S.
" "-----	"-----	1.83844, 137°.6 }-----	37, 372.
Silver chlorobromiodide*.	Ag I. 2 Ag Br. 2 Ag Cl-----	6.152, 0°-----	Rodwell. P. T. 1882, 1140.
" "-----	"-----	5.5118, 383° }-----	
" " (Iodobromite)-----	"-----	5.713, 18°-----	
" "-----	Ag I. Ag Br. Ag Cl-----	6.1197, 0°-----	Rodwell. P. T. 1882, 1140.
" "-----	"-----	5.5673, 331° }-----	

\* Rodwell's chlorobromiodides may be regarded as alloys. For each of these the higher temperature is the melting point.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silver chlorobromiodide.	2 Ag I. Ag Br. Ag Cl	5.503, 0°	Rodwell. P. T. 1882, 1140.
" "	" "	5.6971, 326°	
" "	3 Ag I. Ag Br. Ag Cl	5.9717, 0°	" "
" "	" "	5.6430, 354°	
" "	4 Ag I. Ag Br. Ag Cl	5.907, 0°	" "
" "	" "	5.680, 380°	

### VII. AMMONIO-CHLORIDES, AMMONIO-BROMIDES, AMMONIO-IODIDES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cadm ammonium chloride.	$N_2 H_6 Cd. Cl_2$	2.632	Topsoe. C. C. 4, 76.
Cadm ammonium bromide.	$N_2 H_6 Cd. Br_2$	3.356	" "
Dimercur ammonium chloride.	$N H_2 Hg'_2. Cl$	6.858, m. of 2	Playfair and Joule. M. C. S. 2, 401.
Dimercur ammonium chloride.	$N_2 H_4 Hg''_2. Cl_2$	5.700	" "
Tetramercur ammonium chloride.	$N_2 Hg''_4 Cl_2. 2 H_2 O$	7.176, m. of 2	" "
Cuprammonium chloride.	$N_2 H_6 Cu. Cl_2$	2.194	" "
Copper ammonio-chloride.	$Cu Cl_2. 4 N H_3. H_2 O$	1.672	" "
Nickel ammonio-bromide.	$Ni Br_2. 6 N H_3$	1.837	Topsoe. C. C. 4, 76.
Nickel ammonio-iodide.	$Ni I_2. 6 N H_3$	2.101	" "
Purpureo-cobalt hexchloride.	$Co_2 (N H_3)_{10}. Cl_6$	1.802, 23°	Gibbs and Genth. A. J. S. (2), 23, 234.
" " "	" "	1.802, 15°	Jorgensen. J. P. C. (2), 19, 49.
" " "	" "	1.808	
Purpureo-cobalt hexbromide.	$Co_2 (N H_3)_{10}. Br_6$	2.483, 17°	" "
Purpureo-cobalt chlorobromide.	$Co_2 (N H_3)_{10}. Cl_4 Br_2$	2.095, 16°	" "
Purpureo-cobalt bromochloride.	$Co_2 (N H_3)_{10}. Cl_2 Br_4$	2.161, 17°	" "
" " "	" "	2.165	" "
Luteo-cobalt hexchloride.	$Co_2 (N H_3)_{12}. Cl_6$	1.7016, 20°	Gibbs and Genth. A. J. S. (2), 23, 319.
Purpureo-chromium hexchloride.	$Cr_2 (N H_3)_{10}. Cl_6$	1.687, 15°	Jorgensen. J. P. C. (2), 20, 105.
Purpureo-chromium chlorobromide.	$Cr_2 (N H_3)_{10}. Cl_4 Br_2$	2.075, 13°	" "
Purpureo-rhodium hexchloride.	$Rh_2 (N H_3)_{10}. Cl_6$	2.072, 18°	Jorgensen. J. P. C. (2), 27, 412.
" " "	" "	2.079, 18°	Jorgensen. J. P. C. (2), 27, 464.
Purpureo-rhodium hexbromide.	$Rh_2 (N H_3)_{10}. Br_6$	2.643, 17°	
" " "	" "	2.650	" "
Purpureo-rhodium hexiodide.	$Rh_2 (N H_3)_{10}. I_6$	3.110, 11°	Jorgensen. J. P. C. (2), 27, 471.
" " "	" "	3.120, 16°	" "

## VIII. INORGANIC OXIDES.

## 1st. Simple Oxides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Water*	H <sub>2</sub> O	1.0000, 4°.07	Standard of comparison.
"	"	.999889, 0°	H <sub>2</sub> O at 3°.78=1.0. Muncke. Mém. Acad. St. Petersburg, 1831.
"	"	.988433, 50°	
"	"	.958737, 100°	
"	"	.999887, 0°	Stampfer. H <sub>2</sub> O at 3°.75=1.0°. P. A. 21, 75.
"	"	.992247, 40°	
"	"	.999862, 0°	Despretz. Ann. (2), 70, 5.
"	"	.99988, 0°	Mendelejeff. A. C. P. 119, 1.
"	"	.95903, 95°.8	
"	"	.93078, 130°.8	
"	"	.93123, 131°	
"	"	.93035, 131°.1	
"	"	.90783	
"	"	.90811	
"	"	.90715, 157°	Buff. H <sub>2</sub> O at 0°=1.0. A. C. P. 4th Supp. 129.
"	"	.95892, 100°	
"	"	.999866, 0°	Rossetti. Ann. (4), 10, 471. Sp. Gr. given for every degree from 0° to 50°.
"	"	1.000000, 4°.07	
"	"	.99975, 10°	
"	"	.99826, 20°	
"	"	.99575, 30°	
"	"	.99238, 40°	
"	"	.98835, 50°	Bedson and Wil- liams. Ber. 14, 2550.
"	"	.99831, 20°	
"	"	.9543, 100°.1	Schiff. Ber. 14, 2763.
"	"	.9585	Schiff. Ber. 14, 2766.
"	"	.9587	
Ice	"	.91812, — 1°	Brunner. H <sub>2</sub> O at 0°=1.0. P. A. 64, 113.
	"	.91912, — 10°	
	"	.92025, — 20°	
	"	.9184, m. of 2	Playfair and Joule.† M. C. S. 2, 401.
	"	.9175	Dufour. P. M. (4), 5, 20.
"	"	.918	Duvernoy. P. A. 117, 454.
"	"	.922	
"	"	.91674	Bunsen. Ann. (4), 23, 65.

\* For water and ice the table makes no pretense at completeness. Only a few important values are given out of a vast number.

† See Playfair and Joule for older values.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ice	$H_2O$	91686, 02	Petterson. " Properties of water and ice."
Hydrogen dioxide	$H_2O_2$	1.452	Thénard. Watts' Diet.
Lithium oxide	$Li_2O$	2.102, 152	Brauner and Watts. P. M. (5), 11, 60.
Sodium oxide	$Na_2O$	2.805	Karsten. Schw. J. 65, 394.
Potassium oxide	$K_2O$	2.656	" "
Silver monoxide	$Ag_2O$	7.143, 162, 6	Heraupath. P. M. 64, 321.
" "	"	7.250	Boullay. Ann. (2), 43, 266.
" "	"	8.2558	Karsten. Schw. J. 65, 394.
" "	"	7.147	Playfair and Joule. M. C. S. 3, 84.
" "	"	7.521, m. of 2.	Schroder. Ber. 9, 1888.
Silver dioxide	$Ag_2O_2$	5.474 (impure)	Mahla. J. 5, 424.
Gluclinum oxide	$GdO_2$	2.997	Ekeberg. P. M. (1), 14, 346.
" "	"	3.021	Elmheden. J. 4, 15.
" "	"	3.061	
" "	"	3.083, powder	H. Rose. P. A. 74, 433.
" "	"	3.09	
" "	"	3.096, 123, ppt.	Nilson and Petterson. C. R. 91, 242.
" "	"	3.027, 103, ignited.	
" "	"	3.021, 96, cryst.	Grandeau. Ann. (6), 8, 193.
" "	"	3.016	
" "	"	3.18, 142, cryst.	Danour. J. 2, 732.
Magnesium oxide	$MgO$	3.674, periclase	Senecchi. J. P. C. 28, 486.
" "	"	3.750	Cossa. Ber. 10, 1747.
" "	"	3.642, 123	Karsten. Schw. J. 65, 394.
" "	"	3.644	H. Rose. P. A. 74, 437.
" "	"	3.650	Elmheden. J. 4, 15.
" "	"	3.636, cryst.	
" "	"	3.12, amorphous.	Bregelmann. Ber. 13, 1741.
" "	"	3.1932, 0, end-cined at 350	Ditte. J. C. S. (2), 9, 870.
" "	"	3.2014, 0, end-cined at 440	
" "	"	3.2482, 0, end-cined at low redness.	From three different sources. Beckurts. Ber. 14, 2063.
" "	"	3.5399, 0, end-cined at bright redness.	
" "	"	2.74	
" "	"	3.056	
" "	"	3.69	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Zinc oxide	Zn O	5.432	Mohs. See Böttger.
" "	"	5.600	Boullay. Ann. (2), 43, 266.
" "	"	5.7344	Karsten. Schw. J. 65, 394.
" "	"	5.6067	Brooks. P. A. 74, 439.
" "	"	5.6570	
" "	"	5.5298, cryst.	
" "	"	5.612	W. and T. J. Herapath. J. C. S. 1, 42.
" "	"	5.612	Filhol. Ann. (3), 21, 415.
" "	"	5.782, 15°, cryst.	Brügelmann. P. A. (2), 4, 286.
" "	"	5.47, amorphous.	Brügelmann. Ber. 13, 1741.
" " Zincite	"	5.684	Blake. J. 13, 752.
" " Artif. cryst.	"	5.5—5.6	Gorgeu. B. S. C. 47, 146.
Cadmium oxide	Cd O	8.183, 16°.5	Herapath. P. M. 64, 321.
" "	"	6.9502	Karsten. Schw. J. 65, 394.
" " Cryst.	"	8.1108	Werther. J. 5, 390.
Mercurous oxide	Hg <sub>2</sub> O	10.69, 16°.5	Herapath. P. M. 64, 321.
" "	"	8.9503	Karsten. Schw. J. 65, 394.
Mercuric oxide	Hg O	11.074, 17°.5	Herapath. P. M. 64, 321.
" "	"	11.085, 18°.3	
" "	"	11.0	Boullay. Ann. (2), 43, 266.
" "	"	11.1909	Karsten. Schw. J. 65, 394.
" "	"	11.29	Leroyer and Dumas. See Böttger.
" "	"	11.344	Playfair and Joule. M. C. S. 3, 84.
" "	"	11.136	Playfair and Joule. J. C. S. 1, 137.
Calcium oxide. Lime	Ca O	3.179	Boullay. Ann. (2), 43, 266.
" " "	"	3.16105	Karsten. Schw. J. 65, 394.
" " "	"	3.180	Filhol. Ann. (3), 21, 415.
" " "	"	3.251, cryst.	Brügelmann. P. A. (2), 4, 282.
" " "	"	3.32	Levallois and Meunier. C. R. 90, 1566.
Strontium oxide	Sr O	3.9321	Karsten. Schw. J. 65, 394.
" "	"	4.611	Filhol. Ann. (3), 21, 415.
" "	"	4.750, cryst.	Brügelmann. P. A. (2), 4, 282.
" "	"	4.51, amorphous.	Brügelmann. Ber. 13, 1741.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Barium oxide	Ba O	4.0	Foureroy. See Bottger.
" "	"	4.2583	Tannertmann. See Bottger.
" "	"	4.7322	Karsten. Schw. J. 65, 394.
" "	"	4.829	Playfair and Joule. M. C. S. 3, 84.
" "	"	4.986	
" "	"	5.456	
" "	"	5.722, cryst.	Filhol. Ann. (3), 21, 415.
" "	"	5.32	Brugemann. P. A. (2), 4, 282.
" "	"		Brugemann. Ber. B. 1741.
Barium dioxide	Ba O <sub>2</sub>	4.958	Playfair and Joule. M. C. S. 3, 84.
Boron trioxide	B <sub>2</sub> O <sub>3</sub>	1.803	Davy. See Bottger.
" "	"	1.83	Berzelius. "
" "	"	1.75	Breithaupt. "
" "	"	1.825, 215.6	Favre and Valson. C. R. 77, 579.
" "	"	1.8766, 0°	Ditte. C. N. 36, 287.
" "	"	1.8476, 42°	
" "	"	1.6988, 80°	
" "	"	1.848, 14°-4	(Bedson and Williams. Ber. 14, 2554.
" "	"	1.859, 15°-8	
" "	Fused	1.75	Quineke. P. A. 135, 642.
Aluminum trioxide	Al <sub>2</sub> O <sub>3</sub>	4.152, 4°	Royer and Dumas. Quoted by Rose. P. A. 47, 429.
" "	"	3.944	(Mohs and Breithaupt. Quoted by Rose.
" "	"	4.004	
" "	"	4.154	Filhol. Ann. (3), 21, 415.
" "	"	3.928, cryst.	Ebelmen. J. 414.
" "	"	3.870	Artificial.
" "	"	3.899	
" "	"	3.750	Heated in wind furnace
" "	"	3.725	
" "	"	3.999, ignited in porcelain furnace.	H. Rose. P. A. 74, 429.
" "	"	4.0067, 14°, powdered	
" "	"	3.989	13.5, after ignition
" "	"	4.008	
" "	"	3.990	Nilson and Pettersson. C. R. 91, 232.
" "	Artificial cryst.	3.98, 14°	Grandeau. Ann. (6), 8, 193.
" "	Ruby	Al <sub>2</sub> O <sub>3</sub>	Brissou. P. des C.
" "	"	3.994, m. of 9	Schaffgotsch. P. A. 74, 429.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Aluminum trioxide. Ruby	$\text{Al}_2\text{O}_3$	3.95, natural	Williams. C. N. 28,
" " " "	"	3.7, artificial	101.
" " Sapphire	"	3.562	Muschenbroek. See
" " " "	"	3.9998	Böttger.
" " " "	"	4.0001	Schaffgotsch. P. A.
" " " "	"	3.98	74, 429.
" " " "	"		Williams. C. N. 28,
" " " "	"	3.990	101.
" " Corundum	"	3.899, 15° 5'	Nilson and Petters-
" " " "	"	3.929	son. C. R. 91, 232.
" " " "	"	3.974	Schaffgotsch. P. A.
" " " "	"	4.022	74, 429.
" " " "	"	3.992, after	Dewille. J. 8, 15.
" " " "	"	ignition.	
" " " "	"	3.979	Church. Geol. Mag.
" " " "	"	4.03	(2), 2, 320.
Scandium trioxide	$\text{Sc}_2\text{O}_3$	3.8	Cleve. C. R. 89, 420.
" " " "	"	3.864	Nilson. C. R. 91,
Yttrium trioxide	$\text{Yt}_2\text{O}_3$	4.842	118.
" " " "	"	5.028, 22°	Ekeberg. P. M. 14,
" " " "	"		346.
" " " "	"	5.046	Cleve and Hoeglund.
" " " "	"		1873.
Indium trioxide	$\text{In}_2\text{O}_3$	7.179	Nilson and Petters-
Lanthanum trioxide	$\text{La}_2\text{O}_3$	5.94	son. C. R. 91,
" " " "	"	5.296, 16°	232.
" " " "	"	6.53, 17°	" "
" " " "	"	6.480	Hermann. J. 14, 192.
Didymium trioxide	$\text{Di}_2\text{O}_3$	6.64	Nordenskiöld. J. 14,
" " " "	"	5.825, 14°	197.
" " " "	"	6.852	Cleve. B. S. C. 21,
" " " "	"	6.950	196.
" " " "	"	7.177	Nilson and Petters-
" " " "	"	7.182	son. C. R. 91, 232.
Didymium pentoxide	$\text{Di}_2\text{O}_5$	5.368, 15°	Hermann. J. 14, 195.
Samarium trioxide	$\text{Sm}_2\text{O}_3$	8.311, 13°	Nordenskiöld. J. 14,
" " " "	"	8.383, 15°	197.
Erbium trioxide	$\text{Er}_2\text{O}_3$	8.8	Cleve. J. C. S. (2),
" " " "	"	8.9	13, 340.
" " " "	"	8.640	Nilson and Petters-
Ytterbium trioxide	$\text{Yb}_2\text{O}_3$	9.175	son. C. R. 91, 232.
Carbon dioxide. L.	$\text{C O}_2$	.9, —20°	Cleve. U. N. A. 1885.
" " " "	"	.83, 0°	Cleve and Hoeglund.
" " " "	"	.6, +30°	B. S. C. 18, 195.
			Nilson and Petters-
			son. C. R. 91,
			232.
			" "
			Thilorier. Ann. (2),
			60, 427.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Carbon dioxide, L.	$\text{CO}_2$	993, 0°	Mitchell. B. J. 22, 77.
" " "	"	.8825, 62.4	
" " "	"	.853, 102.6	
" " "	"	.7385, 207.3	
" " "	"	.9952, —10°	
" " "	"	.9710, —5°	
" " "	"	.9471, 0°	
" " "	"	.9222, 5°	
" " "	"	.8948, 10°	
" " "	"	.8635, 15°	
" " "	"	.8267, 20°	D'Andréff. Ann. (3), 56, 317.
" " "	"	.7831, 25°	
" " "	"	1.057, —34°	
" " "	"	1.016, —25°	
" " "	"	.966, —11° 5	
" " "	"	.910, —1° 6	
" " "	"	.907, +1° 3	
" " "	"	.868, 62.8	
" " "	"	.810, 11°	
" " "	"	.788, 152.9	
" " "	"	.726, 222.2	Cailletet and Mathias. C. R. 102, 1202.
" " Solid	"	1.188	
" " "	"	1.199	
" " "	"	1.58—1.6	Landolt. Ber 17, 311.
Silicon monoxide	$\text{SiO}$	2.893, 4°	Dewar. Readat Am. Assoc. in 1884.
Silicon dioxide, Artif.	$\text{SiO}_2$	2.20, 127.5, m. of 9.	Mahery. A. C. J. 9, 15.
" " "	"	2.322	Schaffgotsch. P. A. 68, 147.
" " "	"	2.324	Ullik. Ber. 11, 2125. From gelatinous silica, ignited.
" " Quartz.	"	2.653, cryst.	Scheerer.
" " "	"	2.659, amethyst	
" " "	"	2.714	Breithaupt. Schw. J. 68, 411.
" " "	"	2.651, smoky	
" " "	"	2.658	
" " "	"	2.651, rose	
" " "	"	2.653	
" " "	"	2.658	
" " "	"	2.618, milky	
" " "	"	2.6351	Boudant. P. A. 14, 474. Extremes of eleven experiments.
" " "	"	2.6541	
" " "	"	2.61	Neumann. P. A. 23, 1.
" " "	"	2.653, 137, m. of 5.	Schaffgotsch.* P. A. 68, 147.
" " "	"	2.656, cryst.	Deville. J. 8, 14.
" " "	"	2.22, after fusion.	
" " "	"	2.65259, 18°	Miller. P. M. (4), 3, 194.

\* See the same paper for many determinations of the specific gravity of opaline minerals.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silicon dioxide. Quartz	Si O <sub>2</sub>	2.6507, 0°	{ Dibbits. (Rock crystal.) Bei. 5, 81. Calculated from sp. g. determinations by Steinheil, data for expansion of water by Regnault and Kopp, and the expansion of quartz as determined by Pfaff and Fizeau.
" " "	"	2.6502, 5°	
" " "	"	2.6498, 10°	
" " "	"	2.6493, 15°	
" " "	"	2.6488, 20°	
" " "	"	2.6484, 25°	
" " "	"	2.6479, 30°	
" " "	"	2.6460, 50°	
" " "	"	2.6409, 100°	
" " Tridymite	Si O <sub>2</sub>	2.295 } 15°-16°	{ Vom Rath. J. 21, 1001.
" " "	"	2.326 } 15°-16°	
" " "	"	2.282, 18°.5	
" " "	"	2.311 } Artif.	G. Rose. Ber. 2, 388.
" " "	"	2.317 } Artif.	
" " "	"	2.373 } Artif.	Hautefeuille. P. M. (5), 6, 78.
" " "	"	2.30, 16°, "	
" " Asmannite	"	2.247	v. Rath. A. J. S. (3), 7, 149.
Titanium dioxide	Ti O <sub>2</sub>	4.18	Klaproth.
" " "	"	3.9311, artif.	Karsten. Schw. J. 65, 394.
" " "	"	4.253, powder	{ Rose.
" " "	"	4.255, ignited	
" " Rutile	"	4.249	Mohs. See Böttger.
" " "	"	4.244—4.245	Scheerer. P. A. 65, 296.
" " "	"	4.250 }	Breithaupt.
" " "	"	4.291 }	
" " "	"	4.420, 0°	Kopp.
" " "	"	4.56	Müller. J. 5, 847.
" " "	"	4.26, artificial.	{ Ebelmen. J. 4, 15, and J. 12, 14.
" " "	"	4.283	
" " "	"	4.3	Hautefeuille. J. 16, 212.
" " "	"	4.173—4.278	Lasaulx. J. 36, 1840.
" " Brookite	"	4.128 }	H. Rose.
" " "	"	4.131 }	
" " "	"	4.165 }	
" " "	"	4.166 }	
" " "	"	3.952, arkansite.	Breithaupt. J. 2, 730.
" " "	"	3.892	Rammelsberg. J. 2, 730.
" " "	"	3.949	
" " "	"	4.03, arkansite	{ Damour. J. 2, 731.
" " "	"	4.083	
" " "	"	4.085	Whitney. J. 2, 731.
" " "	"	4.22	Frödmann. J. 3, 704.
" " "	"	4.20	Beck. J. 3, 704.
" " "	"	4.1, artificial	Hautefeuille. J. 17, 214.
" " Anatase	"	3.857	Vauquelin.
" " "	"	3.826	Mohs. See Böttger.
" " "	"	3.75	Breithaupt.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Titanium dioxide, Anatase	Ti O <sub>2</sub>	3.82	Kobell.
" " "	"	3.890	H. Rose.
" " "	"	3.912	
" " "	"	4.06	Danour, J. 10, 661.
" " "	"	3.7, artificial	Hautefeuille, J. 17,
" " "	"	3.9 " "	215.
Germanium dioxide	Ge O <sub>2</sub>	4.703, 18°	Winkler, Ber. 19, ref. 654.
Zirconium dioxide	Zr O <sub>2</sub>	4.30	Khproth. See Bottger.
" " "	"	5.5	Spjogen, J. 6, 349.
" " "	"	4.9	Berlin, J. 6, 350.
" " "	"	5.19	Hermann, J. 19, 191.
" " "	"	5.742	Nordenskiöld, P. A.
" " "	"	5.710, 15°	
" " "	"	5.624	114, 626.
" " "	"	5.42, cryst.	Knop, A. C. P. 159, 52.
" " "	"	5.52, moria	Knop, A. C. P. 159, 53.
" " "	"	5.850	Nilson and Peters- son, C. R. 91, 232.
Tin monoxide	Sn O	6.666, 162.5	Hera path, P. M. 61, 321.
" " "	"	5.9797, 02, olive	Ditte, Ann. (5), 27, 169. All crystal- line. Prepared by different meth- ods.
" " "	"	6.1083, 03, dark green.	
" " "	"	6.600, 07, black	
" " "	"	6.3251, 03, dark violet.	
" " "	"	6.4165, 03, ditto heated to 300°	
Tin dioxide	Sn O <sub>2</sub>	6.96	Mohs. See Bottger.
" " "	"	6.639, 167.5	Hera path, P. M. 61, 321.
" " "	"	6.99	Baillay, Ann. (2), 43, 266.
" " "	"	6.892	Breithaupt.
" " "	"	7.180	
" " "	"	6.952	Neumann, P. A., 23, 1.
" " "	"	6.831, 02	Kepp.
" " Artif. cryst.	"	6.72	Deubrée, J. 12, 11.
" " "	"	6.849	H. Rose.
" " "	"	6.978	
" " "	"	6.7122, 4°	Playfair and Joule, J. C. S. 1, 137.
" " "	"	6.753	Mallet, J. 3, 705.
" " "	"	6.862	Bergemann, J. 10, 661.
" " "	"	6.8432 { 152.5,	Cassiterite from Bolivia, Forbes, P. M. (4), 30, 139.
" " "	"	6.8439 { color-	
" " "	"	less,	
" " "	"	6.701, 152.5,	yellow
" " "	"	6.7621, 152.5,	
" " Artif. cryst.	"	black,	6.019
" " "	"		Leeds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tin dioxide. Artif. cryst.	$\text{Sn O}_2$	6.70	Levy and Bourgeois. Bei. 6, 531.
Lead hemioxide	$\text{Pb}_2 \text{O}$	9.772	Playfair and Joule. M. C. S. 3, 83.
Lead monoxide	$\text{Pb O}$	9.277, 17°.5	Herapath. P. M. 64, 321.
" "	"	9.500	Boullay. See Böttger.
" "	"	9.2092	Karsten. Schw. J. 65, 394.
" "	"	9.250	Playfair and Joule. M. C. S. 3, 84.
" "	"	9.361	Filhol. Ann. (3), 21, 415.
" "	"	9.3634, 4°	Playfair and Joule. J. C. S. 1, 137.
" "	"	8.02, cryst.	Gräulich. J. 11, 186.
" "	"	9.1699, greenish yellow.	Ditte. C. R. 94, 1310. Samples differently prepared by boiling $\text{Pb (O H)}_2$ with $\text{K O H}$ .
" "	"	9.2089, yellow.	
" "	"	9.8835, brownish yellow.	
" "	"	9.5605, greenish gray.	
" "	"	9.4223, dark green.	
" "	"	9.3757	Geuther. A. C. P. 219, 60-61.
" "	"	9.29, 15°, yellow cryst.	
" "	"	9.126, 15°, red cryst.	
" "	"	9.125, 14°, red cryst.	
" "	"	9.09, 15°, red pulv.	
" "	"	8.74, 14°, red, very pure.	
Lead dioxide	$\text{Pb O}_2$	8.902, 16°.5	Herapath. P. M. 64, 321.
" "	"	8.933	Karsten. Schw. J. 65, 394.
" "	"	8.756	Playfair and Joule. M. C. S. 3, 84.
" "	"	8.897	
" "	"	9.045	Wernicke. J. C. S. (2), 9, 306.
Minium	$\text{Pb}_3 \text{O}_4$	8.94	Muschenbroeck. Watts' Dict.
"	"	9.096, 15°	Herapath. P. M. 64, 321.
"	"	9.190	Boullay. Ann. (2), 43, 266.
"	"	8.62	Karsten. Schw. J. 65, 394.
Cerium dioxide	$\text{Ce O}_2$	5.6059	" "
" "	"	6.00	Hermann. J. P. C. 92, 113.
" "	"	6.93	Nordenskiöld. J. 14, 184.
" "	"	6.94	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cerium dioxide.....	Ce O <sub>2</sub> .....	7.99, 14° 5, } cryst.	Nordenskiöld, J. 14, 184.
" ".....	".....	6.739.....	Nilson and Peters- son, C. R. 91, 232.
Thorium dioxide*	Th O <sub>2</sub> .....	9.402.....	Berzelius, P. A. 16, 385.
" ".....	".....	9.21.....	Nordenskiöld and Chydenius, J. 13, 134.
" ".....	".....	9.077.....	Chydenius, J. 16, 194.
" ".....	".....	9.200.....	Nilson and Petters- son, C. R. 91, 232.
" ".....	".....	9.861.....	
" ".....	".....	10.2199 } 17°	Nilson, Ber. 15, 2536.
" ".....	".....	10.2206 }	
" ".....	".....	9.876, 15°	Troost and Ouyard, C. R. 102, 1422.
Nitrogen monoxide, L.	N <sub>2</sub> O.....	9.756, —5°	D'Andréff, Ann. (3), 56, 317.
" ".....	".....	9.370, 0°	
" ".....	".....	9.177, —5°	
" ".....	".....	8.964, 10°	
" ".....	".....	8.704, 15°	
" ".....	".....	8.365, 20°	Will, C. N. 28, 170. Wroblevsky, C. R. 97, 166.
" ".....	".....	9.004, 0°	
" ".....	".....	9.434.....	
" ".....	".....	1.002, —20° 6	Cailliet and Ma- thias, C. R. 102, 1202.
" ".....	".....	9.52, —11° 6	
" ".....	".....	9.30, —5° 5	
" ".....	".....	9.12, —2° 2	
" ".....	".....	8.49, —6° 6	
" ".....	".....	8.10, 11° 7	
" ".....	".....	7.58, 19° 8	
" ".....	".....	6.98, 23° 7	
Nitrogen tetroxide, L.	N <sub>2</sub> O <sub>4</sub> .....	1.451.....	Dulong, Schw. J. 18, 177.
" ".....	".....	1.42.....	Mitscherlich, Schw. J. 63, 109.
" ".....	".....	1.4903, 0°	Thorpe, J. C. S. 37, 224.
" ".....	".....	1.43958, 21° 64	
Phosphorus pentoxide	P <sub>2</sub> O <sub>5</sub> .....	2.387.....	Brisson, P. des C.
Vanadium dioxide.....	V <sub>2</sub> O <sub>3</sub> .....	3.61, 20°	Schafarik, J. P. C. 76, 142.
Vanadium trioxide.....	V <sub>2</sub> O <sub>3</sub> .....	4.72, 16°, m. of 3.	Schafarik, J. P. C. 90, 12.
Vanadium pentoxide	V <sub>2</sub> O <sub>5</sub> .....	3.472 } 20°	Schafarik, J. P. C. 76, 142.
" ".....	".....	3.510 }	
" ".....	".....	3.35.....	J. J. Watts, Roscoe and Schorlem- mer's Treatise.
Arsenic trioxide.....	As <sub>2</sub> O <sub>3</sub> .....	3.698.....	Le Roy and Dumas, Gm. H. 1, 69.
" ".....	".....	3.690 }	Leonhard.
" ".....	".....	3.710 }	

\* For this substance Nilson's determination is the only one of value.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Arsenic trioxide -----	$\text{As}_2\text{O}_3$ -----	3.695, octahe- dral.	} Guibourt. B. J. 7, 128.
" " -----	" -----	3.7385, amor- phous.	
" " -----	" -----	3.729, $17^\circ.2$ -----	Herapath. P. M. 64, 321.
" " -----	" -----	3.7026 -----	} Karsten. Schw. J. 65, 394.
" " -----	" -----	3.7202 -----	
" " -----	" -----	3.798 -----	Taylor. Gm. H.
" " -----	" -----	3.884 -----	Filhol. Ann. (3), 21, 415.
" " -----	" -----	3.85, native -----	Claudet. J. 21, 230.
Arsenic pentoxide -----	$\text{As}_2\text{O}_5$ -----	3.7342 -----	Karsten. Schw. J. 65, 394.
" " -----	" -----	3.985 -----	} Playfair and Joule. M. C. S. 3, 83.
" " -----	" -----	4.023 -----	
" " -----	" -----	4.250 -----	Filhol. Ann. (3), 21, 415.
Antimony trioxide -----	$\text{Sb}_2\text{O}_3$ -----	5.566 -----	Mohs. See Böttger.
" " -----	" -----	5.778 -----	Boullay. Ann. (2), 43, 266.
" " -----	" -----	6.6952 -----	Karsten. Schw. J. 65, 394.
" " -----	" -----	5.251 -----	Playfair and Joule. M. C. S. 3, 83.
" " -----	" -----	5.11, octahedral.	} Terrell. J. P. C. 98, 154.
" " -----	" -----	3.72, prismatic.	
Valentinite -----	" -----	5.566 -----	Dana's Mineralogy.
Senarmonite -----	" -----	5.22—5.30 -----	" "
Antimony tetroxide -----	$\text{Sb}_2\text{O}_4$ -----	4.074 -----	Playfair and Joule. M. C. S. 3, 83.
Cervantite -----	" -----	4.084 -----	Dana's Mineralogy.
Antimony pentoxide -----	$\text{Sb}_2\text{O}_5$ -----	6.525 -----	Boullay. Ann. (2), 43, 266.
" " -----	" -----	3.779 -----	Playfair and Joule. M. C. S. 3, 83.
Bismuth trioxide -----	$\text{Bi}_2\text{O}_3$ -----	8.211, $18^\circ.3$ -----	Herapath. P. M. 64, 321.
" " -----	" -----	8.449 -----	Le Royer and Du- mas. See Böttger.
" " -----	" -----	8.1735 -----	Karsten. Schw. J. 65, 394.
" " -----	" -----	8.079 -----	Playfair and Joule. M. C. S. 3, 82.
" " -----	" -----	8.855 } -----	} Schröder. Dm. 1873.
" " -----	" -----	8.868 } -----	
Bismuth tetroxide -----	$\text{Bi}_2\text{O}_4$ -----	5.6, $20^\circ$ -----	Muir, Hoffmeister, and Robbs. J. C. S. 39, 32.
Bismuth pentoxide -----	$\text{Bi}_2\text{O}_5$ -----	5.917 } -----	} Brauner and Watts. P. M. (5), 11, 60.
" " -----	" -----	5.919 } $15^\circ$ {	
" " -----	" -----	5.1, $20^\circ$ -----	
Columbium pentoxide -----	$\text{Cb}_2\text{O}_5$ -----	4.56 { Extreme- of several determi- nations.	} H. Rose. J. 1, 405.
" " -----	" -----	5.26 {	

NAME.	FORMULA.	SPE. GRAVITY.	AUTHORITY.
Columbium pentoxide	$\text{Cb}_2\text{O}_5$	6.140 From fusion	
"	"	6.146 " with $\text{K}_2\text{S}_2\text{O}_7$	
"	"	6.48, ditto, ignited.	
"	"	5.83, more strongly ignited.	
"	"	5.90	
"	"	5.98	H. Rose, J. 12, 158. For full details as to modes of preparation, character of samples, etc., see the original paper.
"	"	5.706 From $\text{CbCl}_5$	
"	"	6.239	
"	"	6.725, ditto, ignited.	
"	"	5.79, more strongly ignited.	
"	"	5.51	
"	"	5.52	
"	"	4.56	Extremes of several determinations.
"	"	6.54	
"	"	5.20	H. Rose, J. 13, 148.
"	"	5.18	
"	"	5.20	Nordenskiöld, J. 14, 209.
"	"	5.18	
"	"	4.37	Prep. by two methods
"	"	4.46	
"	"	4.54	
"	"	4.53	Marignac, J. 18, 198.
"	"	5.00	Hermann, J. 18, 209.
"	"	4.34	Knop, A. C. P. 159, 36.
Tantalum pentoxide	$\text{Ta}_2\text{O}_5$	7.03	Extremes of several determinations.
"	"	8.26	
"	"	7.055	From fusion with $\text{K}_2\text{S}_2\text{O}_7$
"	"	7.065	
"	"	7.986, ditto, ignited.	
"	"	7.028	From $\text{TaCl}_5$
"	"	7.280	
"	"	7.284, ditto, crystalline.	
"	"	7.994, ditto, ignited.	
"	"	7.652, ditto, more strongly.	
"	"	8.257, ditto, in porcelain furnace.	
"	"	7.00	Hermann, J. 18, 209.
"	"	7.35, from $\text{TaCl}_5$ ignited.	Marignac, J. P. C. 99, 33.
"	"	8.01, from $\text{NH}_4$ salt.	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tantalum pentoxide	Ta <sub>2</sub> O <sub>5</sub>	7.60	{ Marignac. J. P. C. 99, 33. Oesten. P. A. 100, 342. Faraday. P. T. 1823, 189. Bussy. P. A. 1, 237.
" "	"	7.64	
" "	"	7.234	
" "	"	7.253	
Sulphur dioxide. L.	S O <sub>2</sub>	1.42	{ D'Andréff. Ann. (3), 56, 317.
" "	"	1.45	
" "	"	1.4911, —20°.5	
" "	"	1.4609, —9°.9	
" "	"	1.4384, —2°.08	
" "	"	1.4318, —0°.25	
" "	"	1.4252, +2°.8	
" "	"	1.4205, 4°.51	
" "	"	1.4102, 8°.27	
" "	"	1.4017, 11°.5	
" "	"	1.3887, 16°.43	
" "	"	1.3769, 20°.63	
" "	"	1.3673, 23°.91	
" "	"	1.3587, 26°.9	
" "	"	1.3513, 29°.57	
" "	"	1.3415, 32°.96	
" "	"	1.3350, 35°.29	
" "	"	1.3258, 38°.65	
" "	"	1.4338, 0°	
" "	"	1.3757, 21°.7	
" "	"	1.3374, 35°.2	
" "	"	1.2872, 52°	
" "	"	1.2523, 62°	
" "	"	1.1845, 82°.4	
" "	"	1.1041, 102°.4	
" "	"	1.0166, 120°.45	
" "	"	.9560, 130°.3	
" "	"	.8690, 140°.8	
" "	"	.8065, 146°.6	
" "	"	.7317, 151°.75	
" "	"	.6706, 154°.3	
" "	"	.6370, 155°.05	
" "	"	.52, 156°	
Sulphur trioxide. S.	S O <sub>3</sub>	1.9546, 13°	Morveau. Watts'
" " " "	"	1.975	Dict.
" " L.	"	1.97, 20°	Baumgartner.
" " S.	"	1.92118	{ Bussy. Ann. (2), 26, 411. Buff. A. C. P. 4th Supp., 129.
" " " "	"	1.90915	
" " " "	"	1.90814	
" " L.	"	1.81958	
" " " "	"	1.8105	
" " " "	"	1.8101	{ Weber. P. A. 159, 318. Nasini. Ber. 15, 2885. Clausnizer. A. C. P. 196, 265. Schafarik. J. P. C. 90, 12. F. W. Clarke. A. J. S. (3), 14, 285.
" " S.	"	1.940, 16°	
" " " "	"	1.9365, 20°	
Selenium dioxide	Se O <sub>2</sub>	3.9538	
Tellurium dioxide	Te O <sub>2</sub>	5.93, 20°	
" " " "	"	5.7559, 12°.5	
" " " "	"	5.7841, 14°	

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Tellurium dioxide. Octahedral.	Te O <sub>2</sub>	5.65	Klein and Morel. C. R. 100, 1140.
" " "	"	5.67	
" " "	"	5.68	
" " Orthorhombic.	"	5.88	
" " "	"	5.90	
" " "	"	5.91	Klein and Morel. C. R. 100, 1140.
" " Calcined	"	5.68, 6°	
Tellurium trioxide	Te O <sub>3</sub>	5.0704, 14° 5'	F. W. Clarke. A. J. S. 65, 14, 286.
" " "	"	5.0791, 11°	
" " "	"	5.1118, 11°	
Chromic oxide	Cr <sub>2</sub> O <sub>3</sub>	5.21, cryst.	Wohler. See Bottger.
" " "	"	4.909	Playfair and Joule. M. C. S. 3, 82.
" " "	"	6.2, cryst.	Schiff. J. 11, 161.
" " "	"	5.010	Schroder. P. A. 106, 226.
Chromic chromate	Cr <sub>5</sub> O <sub>9</sub>	1.0, 10°	Gauthier. J. 14, 242.
Chromium trioxide	Cr O <sub>3</sub>	2.676, m. of 2.	Playfair and Joule. M. C. S. 2, 418.
" " "	"	2.737, 14°, cryst.	Ehlers. B. D. Z.
" " "	"	2.629, 14°, after fusion.	
" " "	"	2.819, 20°	Schafarik. J. P. C. 90, 12.
" " "	"	2.775 Ex. (	Zettinow. P. A. 113, 474.
" " "	"	2.801) tremes (	
Molybdenum dioxide	Mo O <sub>2</sub>	5.67	Bucholz. N. J. 20, 121.
" " "	"	6.44, 16°	Maitre and Panchi-anco. Ber. 15, 527.
Molybdenum trioxide	Mo O <sub>3</sub>	3.460	Thomson. See Bottger.
" " "	"	3.49	Berzelius. " "
" " "	"	4.19	(Weisbach. Dana's
" " "	"	4.50	(Min.
" " "	"	4.39, 21°, cryst.	Schafarik. J. P. C. 90, 12.
Tungsten dioxide	W O <sub>2</sub>	12.1109	Karsten. Schw. J. 65, 394.
Tungsten trioxide	W O <sub>3</sub>	6.12	D'Elhuyart. Gm. H.
" " "	"	5.274, 16° 5'	Hergpath. P. M. 64, 321.
" " "	"	7.1396	Karsten. Schw. J. 65, 394.
" " "	"	6.302	(Nordenskiöld. J. 11, 214.
" " "	"	6.384	cryst.
" " "	"	7.16, amor-	Zettinow. J. 20, 216.
" " "	"	7.232, 17°,	
" " "	"	cryst.	
Uranous oxide	U O <sub>2</sub>	10.15	Ebelmen. J. P. C. 27, 385.
Uranoso-uranic oxide	U <sub>3</sub> O <sub>8</sub>	7.1932	Karsten. Schw. J. 65, 394.
" " "	"	7.31	Ebelmen. J. P. C. 27, 385.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Uranic oxide	$UO_3$	5.02	two lots. { Brauner and Watts. P. M. (5), 11, 60.
" "	"	5.26	
Chlorine trioxide. L.	$Cl_2O_3$	1.3298	} 0° { Brandau. Z. C. 13, 47.
" "	"	1.387	
Iodine pentoxide	$I_2O_5$	4.250	Filhol. Ann. (3), 21, 415.
" "	"	4.7987, 9°	Kammerer. P. A. 138, 401.
" "	"	4.487, 0°	Ditte. Z. C. 13, 303.
" "	"	5.037, 0°	Ditte. Ann. (4), 21, 10.
" "	"	5.020, 51°	
Manganous oxide	$MnO$	4.7264, 17°	Herapath. P. M. 64, 321.
" "	"	5.38	Playfair and Joule. M. C. S. 3, 80.
" "	"	5.091	Rammelsberg. J. 18, 878.
" " Manganosite.	"	5.18	Blomstrand. J. 28, 1209.
" "	"	5.010, 4°	Veley. J. C. S. 1882, 65.
Manganoso-manganic oxide.	$Mn_3O_4$	4.746	} Playfair and Joule. M. C. S. 3, 80.
" " "	"	4.653	
" " "	"	4.325	Playfair and Joule. J. C. S. 1, 137.
" " "	"	4.718, artif.	} Rammelsberg. J. 18, 878.
" " "	"	4.856, native	
" " "	"	4.80, artificial	Gorgeu. C. R. 96, 1145.
Manganic oxide	$Mn_2O_3$	4.82, braunite	Haidinger. Gm. H.
" "	"	4.568	} Playfair and Joule. M. C. S. 3, 80.
" "	"	4.619	
" "	"	4.325, artif.	} Rammelsberg. J. 18, 878.
" "	"	4.752, braunite.	
Manganese dioxide	$MnO_2$	4.819, pyrolusite	Turner. See Böttger.
" "	"	5.026	Rammelsberg. J. 18, 878.
" "	"	4.838	} Breithaupt. Dana's Min.
" "	"	4.880	
" "	"	4.826	Pisani. Dana's Min.
" "	"	4.965	} Dana and Penfield. A. J. S. (3), 35, 246.
" "	"	5.040	
Ferroso-ferrie oxide	$Fe_3O_4$	5.094	Mohs. See Böttger.
" " "	"	4.960	Gerolt. " "
" " "	"	4.900	} Leonhard. See Bött- ger.
" " "	"	5.200	
" " "	"	5.300, 16° 5'	Herapath. P. M. 64, 321.
" " "	"	5.400	} Boullay. Ann. (2), 43, 266.
" " "	"	5.480	
" " "	"	5.168	} Kenngott. Dana's Min.
" " "	"	5.180	
" " "	"	5.453	Playfair and Joule. M. C. S. 3, 81.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ferroso-ferrie oxide	$\text{Fe}_3\text{O}_4$	5.12, 0 $^{\circ}$ , mag- netite.	Kopp.
" " "	"	5.106 }	Rammelsberg.
" " "	"	5.148 }	
" " "	"	5.185 }	
" " "	"	4.86 } two al-	
" " "	"	5.00 } lotropic	
" " "	"	5.01 } varieties	Moissan. Ann. (5), 21, 223.
" " "	"	5.21 } artif. }	Gögen. C. R. 104, 1176.
" " "	"	5.25 } cryst. }	
Ferrie oxide.	$\text{Fe}_2\text{O}_3$	5.251	Mohs. See Bottger.
" " "	"	5.261	Breithaupt
" " "	"	5.959, 16 $^{\circ}$ .5, ppt.	Herapath. P. M. 64, 321.
" " "	"	5.225	Boullay. Ann. (2), 43, 266.
" " "	"	5.079, native	Neumann. P. A. 23, 1.
" " "	"	5.121, 12 $^{\circ}$ .5	Kopp.
" " "	"	4.679 }	Playfair and Joule. M. C. S. 3, 80.
" " "	"	5.135, ignited }	
" " "	"	5.241 }	Rammelsberg.
" " "	"	5.283 } native	
" " "	"	5.191 }	G. Rose.
" " "	"	5.214 }	
" " "	"	5.230 }	
" " "	"	5.169, ppt.	H. Rose. P. A. 74, 410.
" " "	"	5.037, ignited	Tommasi. Les Men- des, 1879.
" " "	"	3.95, yellow	Playfair and Joule. M. C. S. 3, 81.
Nickelous oxide	$\text{NiO}$	5.597	Playfair and Joule. M. C. S. 3, 81.
" " "	"	5.745, furnace product.	Genth. J. 1, 444.
" " "	"	6.605, cryst.	
" " "	"	6.398	Bergemann. J. 11, 683.
" " "	"	6.661	Rammelsberg. J. 2, 282.
" " "	"	6.8, cryst.	Elchmen. J. 4, 16.
Nickelic oxide	$\text{Ni}_2\text{O}_3$	4.846, 16 $^{\circ}$ .5	Herapath. P. M. 64, 321.
" " "	"	4.844	Playfair and Joule. M. C. S. 3, 81.
Cobaltous oxide	$\text{Co}_2\text{O}_3$	5.597	" " "
" " "	"	5.750, ignited	" " "
Cobaltoso-cobaltic oxide	$\text{Co}_3\text{O}_4$	5.833 }	Rammelsberg. J. 2, 282.
" " "	"	6.296 }	
Cobaltic oxide.	$\text{Co}_2\text{O}_3$	5.922, 16 $^{\circ}$ .5	Herapath. P. M. 64, 321.
" " "	"	5.600	Boullay. Gm. H. 1, 69.
" " "	"	4.844	Playfair and Joule. M. C. S. 3, 81.
Cuprous oxide	$\text{Cu}_2\text{O}$	6.052 }	Herapath. P. M. 64, 321.
" " "	"	6.093 }	
" " "	"	5.751	Kersten. Schw. J. 65, 394.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cuprous oxide	$\text{Cu}_2\text{O}$	5.75	Leroyer and Dumas. See Böttger.
" "	"	5.746	Playfair and Joule. M. C. S. 3, 82.
" "	"	5.300	Persoz. J. P. C. 47, 84.
" "	"	5.342	
" "	"	5.375	
Cupric oxide	$\text{CuO}$	6.401, 16°.5	Hera path. P. M. 64, 321.
" "	"	6.130	Boullay. Ann. (2), 43, 266.
" "	"	6.4304	Karsten. Schw. J. 65, 394.
" "	"	5.90	Playfair and Joule. M. C. S. 3, 82.
" "	"	6.414, ignited	
" "	"	6.322	
" "	"	6.130	Persoz. J. P. C. 47, 84.
" "	"	6.225	
" "	"	6.400	
" "	"	6.451, furnace product.	Jenzsch. J. 12, 214.
" "	"	6.400	Hampe. Z. C. 13, 363.
" "	"	6.25, melaconite.	Whitney. J. 2, 728.
" "	"	5.952	Rammelsberg. P. A. 80, 287.
Ruthenium dioxide	$\text{RuO}_2$	7.2	Deville and Debray. J. 12, 236.

## 2d. Double and Triple Oxides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium uranium oxide	$\text{Na}_2\text{U}_3\text{O}_{10}$	6.912	Drenkmann. J. 14, 257.
Delafossite	$\text{Cu}'_2\text{Fe}'''\text{O}_3$	5.07, 25°	Friedel. C. R. 77, 211.
Spinel	$\text{MgAl}_2\text{O}_4$	3.452, artif.	Ebelmen. J. 4, 12. Breithaupt.
"	"	3.48, natural	
"	"	3.52	
"	"	3.523	Haidinger. Dana's Min.
"	"	3.631	{ Church. Geol. Mag. (2), 2, 320.
"	"	3.715	
"	"	3.77	
Gahnite	$\text{ZnAl}_2\text{O}_4$	4.580, artif.	Ebelmen. J. 4, 13.
"	"	4.317	G. Rose.
"	"	4.589	
"	"	4.89	
"	"	4.91	Brush. A. J. S. (3), 1, 28.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY
Gahnite	$\text{Zn Al}_2 \text{O}_4$	4.576	Genth and Keller, J. 36, 1843.
" Furnaceproduct.	"	4.49—4.52	Schulze and Stelzner, Z. K. M. 7, 603.
Hercynite	$\text{Fe}^{''} \text{Al}_2 \text{O}_4$	3.91	Zippe, Dana's Min.
"	"	3.95	
Chrysoberyl	$\text{Gl Al}_2 \text{O}_4$	3.759 artif.	Ebelmen, J. 4, 13.
"	"	3.597	Rose, Dana's Min.
"	"	3.689	From three localities.
"	"	3.734	Kokscharof, J. 14, 976, and J. 15, 715.
" Alexandrite	"	3.835	
"	"	3.614	Nilson and Pettersson, C. R. 91, 232.
"	"	3.734	
"	"	3.700	Church, Geol. Mag. 12, 2, 320.
"	"	3.800	
Calcium iron oxide	$\text{Ca Fe}^{'''2} \text{O}_4$	4.693	Percy, P. M. 4, 45, 455.
Magnesiiferite	$\text{Mg Fe}^{'''2} \text{O}_4$	4.568	Rammelsberg, J. 12, 779.
"	"	4.611	
"	"	4.638	Moore, J. C. S. 36, 17.
Hetaerolite	$\text{Zn Mn}_2 \text{O}_4$	4.933	
Zinc iron oxide	$\text{Zn Fe}^{'''2} \text{O}_4$	5.432 cryst.	Ebelmen, J. 4, 13.
" " "	"	5.33	Gorgeu, B. S. C. 47, 372.
Zinc chromium oxide	$\text{Zn Cr}_2 \text{O}_4$	5.300	"
Manganese chromium oxide.	$\text{Mn Cr}_2 \text{O}_4$	4.87	"
Chromite	$\text{Fe}^{''} \text{Cr}_2 \text{O}_4$	4.321	Thomson, Dana's Min.
"	"	4.498	Dana's Mineralogy.
"	"	4.568	
Jacobsite	$\text{Mg Fe}^{'''2} \text{O}_4, 2 \text{ Mn Fe}^{'''2} \text{O}_4$	4.75, 462	Damour, C. R. 69, 168.
Chrompicotite	$2 \text{ Fe}^{''} \text{Al}_2 \text{O}_4, 3 \text{ Mg Cr}_2 \text{O}_4$	4.415, 203	Petersen, J. P. C. 106, 137.

## IX. INORGANIC SULPHIDES.

## 1st. Simple Sulphides

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY
Hydrogen monosulphide	$\text{H}_2 \text{S}$	1.19, 122	Faraday, Gm. H. 2, 197.
"	"	1.91, 18, 15	Blockade, P. R. S. 37, 355.
Hydrogen persulphide	$\text{H}_2 \text{S}_2$ or $\text{H}_2 \text{S}_8$ ?	1.7342	Ramsay, J. C. S. 27, 860.
Sodium sulphide	$\text{Na}_2 \text{S}$	2.474	Fillhol, Ann. 13, 21, 415.
Potassium sulphide	$\text{K}_2 \text{S}$	2.430	"

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silver sulphide -----	Ag <sub>2</sub> S -----	6.8501, artif. -----	Karsten. Schw. J. 65, 394.
“ “ Argentite -----	“ -----	7.269 } -----	Dauber. J. 13, 748.
“ “ “ -----	“ -----	7.317 } -----	
“ “ Acanthite -----	“ -----	7.31 } -----	Kenngott. J. 8, 908.
“ “ “ -----	“ -----	7.36 } -----	
“ “ “ -----	“ -----	7.164 } ex- -----	Dauber. J. 13, 748.
“ “ “ -----	“ -----	7.326 } tremes. -----	
“ “ Dalmenzite -----	“ -----	7.02 -----	Breithaupt. J. 15, 709.
Thallium sulphide -----	Tl <sub>2</sub> S -----	8.00 -----	Lamy. J. 15, 185.
Oldhamite -----	Ca S. (Impure) -----	2.58 -----	Maskelyne. P. T. 1870, 196.
Zinc sulphide -----	Zn S -----	3.9235 -----	Karsten. Schw. J. 65, 394.
“ “ Blende -----	“ -----	4.060 -----	Neumann. P. A. 23, 1.
“ “ “ -----	“ -----	4.063 -----	Henry. J. 4, 756.
“ “ “ -----	“ -----	4.07 -----	Kuhlmann. J. 9, 832.
“ “ “ -----	“ -----	4.05 -----	Tschermak. S. W. A. 45, 603.
“ “ “ -----	“ -----	4.033 -----	Genth. Am. Phil. Soc. 1882.
Cadmium sulphide -----	Cd S -----	4.5, artificial -----	Schüler. J. 6, 367.
“ “ -----	“ -----	4.5 -----	Söchtig. Dana's Min.
“ “ Greenockite -----	“ -----	4.605 -----	Karsten. Schw. J. 65, 394.
“ “ “ -----	“ -----	4.908 -----	Breithaupt. Watts' Diet.
“ “ “ -----	“ -----	4.80 -----	Brooke. P. A. 51, 274.
Mercuric sulphide -----	Hg S -----	8.124 -----	Boullay. Ann. (2), 43, 266.
“ “ -----	“ -----	8.0602 -----	Karsten. Schw. J. 65, 394.
“ “ -----	“ -----	8.090, cinna- -----	} Moore. J. P. C. (2), 2, 319.
“ “ -----	“ -----	7.701 } natural, -----	
“ “ -----	“ -----	7.748 } amor- -----	
“ “ -----	“ -----	7.552, artif. -----	
“ “ -----	“ -----	7.81, metacin- -----	Penfield. A. J. S. (3), 29, 453.
Carbon monosulphide -----	C S -----	1.66, s. -----	Sidot. C. R. 81, 33.
Carbon disulphide -----	C S <sub>2</sub> -----	1.272 -----	Berzelius and Mar- cet. Schw. J. 9, 284.
“ “ -----	“ -----	1.263 -----	Cluzel. Gm. H.
“ “ -----	“ -----	1.2693, 15° -----	Gay Lussac.
“ “ -----	“ -----	1.265 -----	Couërbe. Ann. (2), 61, 232.
“ “ -----	“ -----	1.2823, 5°-10° -----	} Regnault. P. A. 62, 50.
“ “ -----	“ -----	1.2750, 10°-15° -----	
“ “ -----	“ -----	1.2676, 15°-20° -----	
“ “ -----	“ -----	1.29312, 0° -----	Pierre. C. R. 27, 213.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Carbon disulphide	$C S_2$	1.29858, 6°	H. L. Buff. A. C. P. 4th Supp. 129.
" "	"	1.27904, 10°	
" "	"	1.26652, 17°	
" "	"	1.227431, 46°	
" "	"	1.2661, 20°	
" "	"	1.2665, 16°, 06	Haugen. P. A. 131, 117.
" "	"	1.2176, 43°	Winkelmann. P. A. 150, 592.
" "	"	1.2176, 43°	Ramsay. J. C. S. 35, 463.
" "	"	1.22215, 0°	Thorpe. J. C. S. 37, 363.
" "	"	1.22242, 46°, 04	
" "	"	1.2233	Schiff. Ber. 14, 2767.
" "	"	1.2234	
" "	"	1.2634, 20°	Nasini. Ber. 15, 2883.
" "	"	1.266, 15°, 2	Friedburg. C. N. 47, 52.
" "	"	1.26569, 17°, 86	Also values for other (°). Dreck- er. P. A. (2), 20, 870.
" "	"	1.26446, 18°, 58	
" "	"	1.25031, 28°, 21	
" "	"	1.23863, 35°, 96	
" "	"	1.2233, 46°, 5	
Tin monosulphide	$Sn S$	4.8523	Schiff. Ber. 19, 560. Karsten. Schw. J. 65, 394.
" "	"	5.267	Boullay. Ann. (2), 43, 266.
" "	"	4.973	Schneider. J. S. 396.
" "	"	5.0802, 0°	Ditte. C. R. 96, 1791.
Tin disulphide	$Sn S_2$	4.415	Boullay. Ann. (2), 43, 266.
" "	"	4.600	Karsten. Schw. J. 65, 394.
Lead sulphide	$Pb S$	7.5052, artif.	" "
" " Galena	"	7.539	Breithaupt. J. P. C. 11, 151.
" "	"	6.9238, 4° pulv.	Playfair and Joule. J. C. S. 1, 137.
" " Galena	"	7.568	Neumann. P. A. 23, 1.
" " "	"	7.51	Tschermak. S. W. A. 45, 603.
" "	"	6.77, artificial	Schneider. J. P. C. (2), 2, 91.
Lead sesquisulphide	$Pb_2 S_3$	6.335	Playfair and Joule. M. C. S. 3, 89.
Cerium sulphide	$Ce_2 S_3$	5.4	Didier. C. R. 100, 1461.
Thorium sulphide	$Th S_2$	8.29	Chydenius. J. 16, 195.
Nitrogen sulphide	$N S$	2.22, 15°	Berthelot and Vi- eille. Ber. 14, 1558.
" "	"	2.1166, 15°	Michaelis. Z. C. 13, 460.
Phosphorus monosulphide	$P S$	1.8	Dupré. J. P. C. 21, 253.
Phosphorus hexsulphide	$P S_6$	2.02	" "
Tetraphosphorus trisulphide.	$P_4 S_3$	2.00, 11	Isambert. C. R. 96, 1501.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Vanadium disulphide	$V_2 S_2$	4.2, scaly	Kay. J. C. S. 37, 728.
“ “	“	4.4, powder	
Vanadium trisulphide	$V_2 S_3$	3.7, scaly	“ “
“ “	“	4.0, powder	
Vanadium tetrasulphide	$V_2 S_4$	4.70, 21°	Schafarik. J. P. C. 90, 12.
Vanadium pentasulphide	$V_2 S_5$	3.0	Kay. J. C. S. 37, 728.
Arsenic disulphide	$As_2 S_2$	3.5444	Karsten. Schw. J. 65, 394.
“ “	“	3.240, realgar	Neumann. P. A. 23, 1.
“ “	“	3.556	Mohs. See Böttger.
Arsenic trisulphide	$As_2 S_3$	3.459	Karsten. Schw. J. 65, 394.
“ “	“	3.48	Haidinger. Dana's Min.
“ “	“	3.44—3.45	Guilbourn. See Böttger.
“ “ Dimorphite	“	3.58	Seacchi. J. 5, 842.
Antimony trisulphide	$Sb_2 S_3$	4.7520	Karsten. Schw. J. 65, 394.
“ “	“	4.15, amorphous.	Fuchs. Watts' Diet.
“ “	“	4.614, black	} H. Rose. J. 6, 361.
“ “	“	4.641, 16° “	
“ “	“	4.280, red	
“ “	“	4.421, ppt.	
“ “	“	4.226, 26° 7, red	} Cooke. Proc. Am. Acad. 1877.
“ “	“	4.223, 23°, ppt.	
“ “	“	4.228, 28° gray	
“ “	“	4.289, 27° “	
“ “	“	4.892	} Ditte. C. R. 102, 212.
“ “	“	5.012	
“ “ Stibnite.	“	4.603	Neumann. P. A. 23, 1.
“ “ “	“	4.516	Haüy. Dana's Min.
“ “ “	“	4.62	Mohs. “ “
Bismuth disulphide	$Bi_2 S_2$	7.29, m. of 5	Werther. J. P. C. 27, 65.
Bismuth trisulphide	$Bi_2 S_3$	7.591, 14° 5	Heraupath. P. A. 64, 321.
“ “	“	7.0001	Karsten. Schw. J. 65, 394.
“ “	“	7.16, native	Forbes. P. M. (4), 29, 4.
Selenium sulphide	$Se S$	3.056, 0°	} Ditte. Z. C. 14, 386.
“ “	“	3.035, 52°	
Molybdenite	$Mo S_2$	4.591	Mohs. See Böttger.
“ “	“	4.444	Seibert. “
Tungsten disulphide	$W_2 S_2$	6.26, 20°	Schafarik. J. P. C. 90, 12.
Chromic sulphide	$Cr_2 S_3$	4.092	Playfair and Joule. M. C. S. 3, 89.
“ “	“	2.79, 10°	} (Schafarik. J. P. C. 90, 12.
“ “	“	3.77, 19°	
Manganese monosulphide.	$Mn S$	3.95—4.01	Leonhard. See Böttger.
Alabandite.			

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Manganese monosulphide, Alabandite.	MnS	4.936	Bergemann, N. J. 1857, 391.
Hauerite	MnS <sub>2</sub>	5.163	Von Hauer, J. 1. 1157.
Iron hemisulphide	Fe <sub>2</sub> S	5.80	Playfair and Joule, M. C. S. 3, 88.
Iron monosulphide, Artif.	FeS	5.035, m. of 2	" "
" " " "	"	4.79	Rammelsberg, J. 15, 263.
" " Troilite.	"	4.787	Rammelsberg, J. 1. 1306.
" " " "	"	4.817	Rammelsberg, J. 17, 904.
" " " "	"	4.75	Smith, J. 8, 1025.
Iron disulphide, Pyrite.	FeS <sub>2</sub>	5.000	Kenngott, J. 6, 780.
" " " "	"	5.028	"
" " " "	"	5.185	Zepharovich, S. W. A. 12, 289.
" " " "	"	5.012	Neumann, P. A. 23, 1.
" " Marcasite.	"	4.882	" "
" " " "	"	4.978	"
" " " "	"	4.847	Dana's Mineralogy.
Ferrie sulphide.	Fe <sub>2</sub> S <sub>3</sub>	4.216	Playfair and Joule, M. C. S. 3, 88.
" " " "	"	4.41	Rammelsberg, J. 15, 262.
Complex sulphide of iron.	Fe <sub>2</sub> S <sub>9</sub>	4.494	Rammelsberg, J. 15, 195.
Pyrrhotite	Fe <sub>7</sub> S <sub>8</sub>	4.584	Kenngott, S. W. A. 9, 575.
" " " "	"	4.564	"
" " " "	"	4.580	Rammelsberg, Dana's Mineralogy.
" " " "	"	4.610	"
Nickel hemisulphide.	Ni <sub>2</sub> S	6.05	Playfair and Joule, M. C. S. 3, 88.
Millerite	NiS	4.601	Kenngott, S. W. A. 9, 575.
" " " "	"	5.05	Rammelsberg, Dana's Mineralogy.
Polydymite	Ni <sub>4</sub> S <sub>3</sub>	4.808	Laspeyres, J. P. C. 2, 14, 397.
" " " "	"	4.816	"
Beyrichite	Ni <sub>3</sub> S <sub>2</sub>	4.7	Liebe, N. J. 1871, 810.
Cobalt disulphide	CoS <sub>2</sub>	4.269	Playfair and Joule, M. C. S. 3, 88.
Cobaltic sulphide	Co <sub>2</sub> S	4.8	Hoffmann's Tables.
Copper hemisulphide	Cu <sub>2</sub> S	5.792, 17.7	Hera path, P. M. 64, 321.
" " " "	"	5.9775	Karsten, Schw. J. 65, 394.
" " " "	"	5.71	Kopp, J. 16, 5.
" " " "	"	5.7922	Thomson, Dana's Min.
" " " "	"	5.521—5.795	Scheerer, P. A. 65, 292.
" " Artif. cryst.	"	5.79	Doelter, Z. K. M. 11, 29.
" " two method.	"	5.809	"

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Copper monosulphide	$\text{Cu S}$	4.1634	Karsten. Schw. J. 65, 394.
“ “ Covellite	“	4.636	Zepharovich. J. 7, 810.
Palladium hemisulphide	$\text{Pd}_2 \text{S}$	7.303, $15^\circ$	Schneider. P. A. 141, 532.
Platinum monosulphide	$\text{Pt S}$	8.847, $16^\circ.25$	Böttger. J. P. C. 3, 267.
Platinum disulphide	$\text{Pt S}_2$	7.224, $18^\circ.75$	“ “
“ “	“	5.27	Schneider. P. A. 138, 604.
Platinum sesquisulphide	$\text{Pt}_2 \text{S}_3$	5.52	“ “

### 2d. Sulpho-Salts of Arsenic, Antimony, and Bismuth.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Proustite	$\text{Ag}_3 \text{As S}_3$	5.524	Mohs.
“	“	5.53—5.59	Breithaupt. See Böttger.
“	“	5.552, $13^\circ$	G. Rose. P. A. 15, 472.
Xanthoconite	$\text{Ag}_9 \text{As}_3 \text{S}_{10}$	4.112—4.159	Breithaupt. J. P. C. 20, 67.
Guitermannite	$\text{Pb}_3 \text{As}_2 \text{S}_6$	5.94	Hillebrand. Bull. No. 20., U. S. G. S., 106.
Sartorite	$\text{Pb As}_2 \text{S}_4$	5.405	Waltershausen. J. 8, 914.
“	“	5.393	
“	“	5.409	
Dufrenoy'site	$\text{Pb}_2 \text{As}_2 \text{S}_5$	5.5616	Landolt. P. A. 122, 373.
“	“	5.549	Damour. Ann. (3), 14, 379.
“	“	5.561	v. Rath. J. 17, 827.
Enargite	$\text{Cu}_3 \text{As S}_4$	4.362	Kenngott. Dana's Min.
“	“	4.430	Breithaupt. J. 3, 702.
“	“	4.445	
“	“	4.37	Kobell. J. 18, 872.
“	“	4.34	Root. J. 21, 998.
“	“	4.43	Burton. J. 21, 998.
“ Guayacanite	“	4.39	Field. J. 12, 771.
“ Clarite	“	4.46	Sandberger. N. J. 1875, 382.
“ Luzonite	“	4.42	Weisbach. M. P. M. 1874, 257.
Julianite	$\text{Cu}_4 \text{As S}_4$	5.12	Websky. Z. G. S. 1871, 486.
Binnite	$\text{Cu}_6 \text{As}_4 \text{S}_9$	4.477	Dana's Mineralogy.
Tennantite	$\text{Cu}_8 \text{As}_2 \text{S}_7$	4.375	Phillips. See Böttger.
“	“	4.530	Scheerer. P. A. 65, 298.
“	“	4.622	Harrington. J. 37, 1911.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium sulphantimonate.	$\text{Na}_3\text{SbS}_6 \cdot 9\text{H}_2\text{O}$	1.801	Schroder. <i>Dm.</i> 1873.
"	"	1.807	"
Pyrargyrite	$\text{Ag}_3\text{SbS}_3$	5.831	Mohs.
"	"	5.75—5.84	Breithaupt. See Bottger.
Miargyrite	$\text{AgSbS}_2$	5.211	Weisbach. <i>J.</i> 18, 869.
"	"	5.212	"
"	"	5.0725	Rumpf. <i>Z. K. M.</i>
"	"	5.0823	7, 513.
" Artificial	"	5.28	Doelter. <i>Z. K. M.</i>
Stephanite	$\text{Ag}_3\text{SbS}_4$	6.269	11, 29.
"	"	6.275, 21°	Mohs. <i>P. A.</i> 15, 474.
"	"	6.28, 18°	H. Rose.
Polybasite	$\text{Ag}_5\text{SbS}_6$	6.214	Frenzel. <i>J.</i> 27, 1239.
"	"	6.009	Dana's Mineralogy.
Polyargyrite	$\text{Ag}_{13}\text{Sb}_2\text{S}_{15}$	6.333	Genth. <i>Am. Phil. Soc.</i> , 1885.
"	"	7.011	Petersen. <i>J.</i> 22, 1197.
Livingstonite	$\text{HgSb}_2\text{S}_4$	4.81	18° 2
" Artificial	"	4.928, 32°	Barcena. <i>A. J. S.</i>
Jamesonite	$\text{Pb}_2\text{Sb}_2\text{S}_5$	5.616, 19°	(3), 8, 116.
"	"	5.601	Baker. <i>C. N.</i> 42, 196.
" Massive	"	5.6788	Schaffgotsch. <i>P. A.</i>
" Artificial	"	5.5	38, 403.
Zinkenite	$\text{PbSb}_2\text{S}_4$	5.303	Lowe. Dana's Min.
"	"	5.310	Rammelsberg. <i>P. A.</i>
"	"	5.21, 18°	77, 240.
Boulangerite	$\text{Pb}_3\text{Sb}_2\text{S}_6$	5.688—5.941	Doelter. <i>Z. K. M.</i>
" Massive	"	5.809—5.877	11, 29.
" Fibrous	"	5.69—6.086	G. Rose. <i>P. A.</i> 7, 91.
Meneghinite	$\text{Pb}_4\text{Sb}_2\text{S}_7$	6.339	Hillebrand. <i>Bull.</i>
"	"	6.115	20, <i>V. S. G. S.</i>
"	"	6.33	Hausmann. <i>P. A.</i>
Geocronite	$\text{Pb}_5\text{Sb}_2\text{S}_8$	6.407	46, 282.
"	"	6.43, 15°	Zepharovich. <i>S. W.</i>
"	"	6.15—6.47, 15°	A. 56, (1), 30.
Plagionite	$\text{Pb}_4\text{Sb}_6\text{S}_{13}$	5.40	v. Rath. <i>J.</i> 20, 974.
Epiboulangerite	$\text{Pb}_6\text{Sb}_4\text{S}_{15}$	6.309	Harrington. <i>J.</i> 37, 1911.
Semseyite	$\text{Pb}_7\text{Sb}_6\text{S}_{16}$	5.6518	Apjohn. Dana's Min.
Freieslebenite	$\text{Pb}_2\text{Ag}_3\text{Sb}_3\text{S}_8$	6.194	Sauvage. <i>Ann. des Mines</i> , (3), 17, 525.
"	"	6.230	Kerndt. <i>P. A.</i> 65, 302.
"	"	6.35	Rammelsberg. <i>P. A.</i>
" Diaphorite	"	5.902	47, 495.
"	"	6.309	Websky. <i>J.</i> 22, 1198.
"	"	6.3518	Sipocz. <i>Ber.</i> 19, 95.
"	"	6.194	Hausmann. Dana's Min.
"	"	6.230	v. Payr. <i>J.</i> 13, 716.
"	"	6.35	Vrba. <i>S. W. A.</i> 63, 143.
"	"	5.902	Zepharovich. <i>S. W.</i>
"	"		A. 63, 143.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Brongniardite	$\text{Pb Ag}_2 \text{Sb}_2 \text{S}_3$	5.950, 18°	Damour. Ann. d. Mines, (4), 16, 227.
Chalcostibite	$\text{Cu Sb S}_2$	4.748	H. Rose. Dana's Min.
"	"	5.015	Breithaupt. Dana's Min.
Famatinite	$\text{Cu}_3 \text{Sb S}_4$	4.57	Stelzner. M. P. M. 1873, 242.
Guejarite	$\text{Cu}_2 \text{Sb}_4 \text{S}_7$	5.03	Cumenge. B. S. M. 2, 201.
Tetrahedrite	$\text{Cu}_8 \text{Sb}_2 \text{S}_7$	4.730	Wittstein. J. 8, 912.
"	"	4.58	Sandmann. A. C. P. 89, 368.
"	"	4.90	Kuhlemann. J. 9, 834.
"	"	4.885	Genth. Am. Phil. Soc. 1885.
Bournonite	$\text{Cu}' \text{Pb Sb S}_3$	5.703—5.796	Zincken. J. 2, 724.
"	"	5.726—5.855	Bromeis. J. 2, 724.
"	"	5.726—5.863	Rammelsberg. J. 2, 724.
"	"	5.80	Field. J. 14, 374.
"	"	5.826	Wait. J. 26, 1147.
"	"	5.737—5.86	Hidegh. J. 37, 1911.
"	"	5.7659	Sipőcz. Ber. 19, 95.
" Artificial	"	5.719	Doelter. Z. K. M. 11, 29.
Berthierite	$\text{Fe Sb}_2 \text{S}_4$	4.043	Pettko. J. 1, 1159.
Silver bismuth glance*	$\text{Ag Bi S}_2$	6.92	Rammelsberg. Z. K. M. 3, 101.
Galenobismutite	$\text{Pb Bi}_2 \text{S}_4$	6.88	Sjögren. G. F. F. 4, 109.
Cosalite	$\text{Pb}_2 \text{Bi}_2 \text{S}_5$	6.22—6.33	Frenzel. J. 27, 1238.
Beegerite	$\text{Pb}_6 \text{Bi}_2 \text{S}_9$	7.273	König. J. 34, 1355.
Rezbanyite	$\text{Pb}_4 \text{Bi}_{10} \text{S}_{19}$	6.09 }	Frenzel. J. 36, 1835.
"	"	6.38 }	
Chiviatite	$\text{Pb}_2 \text{Bi}_6 \text{S}_{11}$	6.920	Rammelsberg. P. A. 88, 320.
Emplectite	$\text{Cu Bi S}_2$	5.18, 5°	Weisbach. J. 19, 916.
Wittichenite	$\text{Cu}_3 \text{Bi S}_3$	4.3	Hilger. J. 18, 870.
Klaprotholite	$\text{Cu}_6 \text{Bi}_4 \text{S}_9$	4.6	Petersen. N. J. 1868, 415.
Aikinite	$\text{Cu}' \text{Pb Bi S}_3$	6.757	Frick. P. A. 31, 530.
"	"	6.1	Chapman. J. 1, 1158.
Kobellite	$\text{Pb}_3 \text{Bi Sb S}_6$	6.29	Satterberg. P. A. 55, 635.
"	"	6.32	
"	"	6.145	Rammelsberg. J. P. C. 86, 340.

\* Alaskaité, a lead silver salt similar to this, has a sp. gr. 6.878. Koenig, Z. K. M. 6, 42.

## 3d. Miscellaneous Double and Oxy-Sulphides.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Thallium potassium sulphide.	$K\ Tl\ S_2$	4.263	Schneider, P. A. 139, 664.
Iron potassium sulphide.	$K\ Fe^{+++}S_2$	2.593	Preis, J. P. C. 107, 10.
Sodium platinum sulphide.	$Na\ Pt_2\ S_3$	6.27, 15	Schneider, P. A. 138, 604.
Potassium platinum sulphide.	$K\ Pt_2\ S_3$	6.44, 157	" "
Stromeyerite	$Ag\ Cu\ S$	6.26	Kopp, J. 16, 5.
"	"	6.255	Stromeyer, Schw. J. 19, 325.
Jalpaite	$Ag_3\ Cu\ S_4$	6.877	Breithaupt, J. 11, 682.
"	"	6.890	"
Sternbergite	$Ag\ Fe_2\ S_{17}$	4.215	Dana's Mineralogy.
Silver gold sulphide	$Ag_{10}\ Au_4\ S_{11}$	8.159	Muir, B. S. C. 18, 222.
Argyrodite	$Ag_8\ Ge\ S_5$	6.085, 157	Richter, Quoted by Winkler.
"	"	6.093	Winkler, J. P. C. (2), 34, 187.
"	"	6.111	"
Christophite	$Zn_2\ Fe\ S_3$	3.911—3.931	Breithaupt, B. H. Ztg. 22, 27.
Guadaluazarite	$Zn\ Hg_6\ S_7$	7.15	Petersen, J. 25, 1093.
Bornite	$Fe\ Cu_3\ S_4$	5.070	Rammelsberg, Z. G. 8, 18, 19.
"	"	4.432	Forbes, J. 4, 758.
"	"	4.91	Katzer, M. P. M. 9, 404.
Ironcoppersulphide, Artif.	$Fe_4\ Cu_6\ S_{10}$	1.85	Doelter, Z. K. M. 11, 29.
Barnhardtite	$Fe_2\ Cu_3\ S_7$	4.521	Genth, J. 8, 910.
Chalcopyrite	$Fe\ Cu\ S_4$	4.185	Forbes, J. 4, 759.
"	"	4.1—4.3	Dana's Mineralogy.
" Artificial	"	4.196	Doelter, Z. K. M. 11, 29.
Ironcoppersulphide, Artif.	$Fe_4\ Cu_4\ S_7$	4.999	" "
Furnace product. Cryst.	$Fe_3\ Cu_4\ S_9$	3.97	Brogger, Z. K. M. 3, 495.
Cubanite	$Fe_2\ Cu\ S_4$	4.026	Breithaupt, P. A. 59, 325.
"	"	4.012	"
"	"	4.18	Smith, J. 7, 810.
Chalcopyrrhotite	$Fe_4\ Cu\ S_6$	4.28	Blomstrand, Dana's Min., 2d Append.
Carnollite	$Co\ Cu\ S_2$	4.58	Fabry, J. 5, 840.
"	"	4.85	Smith and Brush, J. 6, 782.
Pentlandite	$Fe\ Ni_2\ S_3$	4.6	Scheerer, P. A. 58, 316.
Horbachite	$Fe_2\ Ni_2\ S_{15}$	4.43	Kneip, N. J. 1873, 523.
Daubreelite	$Fe\ Cr_3\ S_4$	5.01	Smith, J. C. S. 36, 33.
Bismuth nickel sulphide	$Bi_3\ Ni_3\ S_7$	9.15	Wether, J. 5, 389.
Voltzite	$4\ Zn\ S_3\ Zn\ O$	3.5—3.8	Vogl, J. 6, 786.
Kermesite	$2\ Sb_2\ S_3\ Sb_2\ O$	4.5—4.6	Dana's Mineralogy.

Castillite, Grunauite, and Stannite are omitted as having too indefinite composition.

## X. SELENIDES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Naumannite -----	$\text{Ag}_2 \text{Se}$ -----	8.0 -----	G. Rose. P. A. 14, 471.
Zinc selenide -----	$\text{Zn Se}$ -----	5.40, 15° -----	Margottet. J. C. S. 32, 570.
Cadmium selenide -----	$\text{Cd Se}$ -----	8.789 -----	Little. J. 12, 94.
“ “ -----	“ -----	5.80 -----	Margottet. J. C. S. 32, 570.
Mercurous selenide -----	$\text{Hg}_2 \text{Se}$ -----	8.877 -----	Little. J. 12, 95.
Tiemannite -----	$\text{Hg Se}$ -----	7.274 -----	Dana's Mineralogy.
“ -----	“ -----	7.1—7.37 -----	Kerl. J. 5, 837.
“ -----	“ -----	8.187 -----	Penfield. A. J. S. (5), 29, 449.
“ -----	“ -----	8.188 -----	“ “
Lead selenide. Artificial --	$\text{Pb Se}$ -----	8.154 -----	Little. J. 12, 95.
“ “ Clausthalite -----	“ -----	6.8 -----	Zinken. P. A. 3, 274.
Ferric selenide -----	$\text{Fe}_2 \text{Se}_3$ -----	6.38 -----	Little. J. 12, 94.
Nickel selenide -----	$\text{Ni Se}$ -----	8.462 -----	“ “
Cobalt selenide -----	$\text{Co Se}$ -----	7.647 -----	“ “
Berzelianite -----	$\text{Cu}'_2 \text{Se}$ -----	6.71 -----	Nordenskiöld. J. 20, 977.
Copper selenide -----	$\text{Cu Se}$ -----	6.655 -----	Little. J. 12 95.
Arsenic triselenide -----	$\text{As}_2 \text{Se}_3$ -----	4.752 -----	“ “
Bismuth triselenide -----	$\text{Bi}_2 \text{Se}_3$ -----	6.82 -----	Schneider. J. 8, 386.
“ “ -----	“ -----	7.406 -----	Little. J. 12, 95.
“ “ Frenzelite -----	“ -----	6.25, 21° -----	Frenzel. N. J. 1874, 679.
“ “ Guanajuatite. -----	“ -----	6.62 -----	Fernandez. Dana's Min., 3d App.
Tin monoselenide -----	$\text{Sn Se}$ -----	5.24, 15° -----	Schneider. J. P. C. 98, 236.
“ “ -----	“ -----	6.179, 0° -----	Ditte. C. R. 96, 1792.
Tin diselenide -----	$\text{Sn Se}_2$ -----	5.133 -----	Little. J. 12, 95.
“ “ -----	“ -----	4.85 -----	Schneider. J. P. C. 98, 236.
Eucairite -----	$\text{Cu}' \text{Ag Se}$ -----	7.48—7.51 -----	Nordenskiöld. J. 20, 977.
Crookesite -----	$(\text{Cu Ag Tl})_2 \text{Se}$ -----	6.90 -----	“ “
Lehrbachite -----	$(\text{Pb Hg}) \text{Se}$ -----	7.804—7.876 -----	Dana's Mineralogy.
Zorgite -----	$(\text{Pb Cu}) \text{Se}$ -----	6.38 -----	Pisani. J. 32, 1183.
“ -----	$(\text{Pb Cu})_3 \text{Se}_2$ -----	6.26 -----	“ “

## XI. TELLURIDES.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Hessite	$\text{Ag}_2\text{Te}$	8.412	G. Rose, P. A. 18, 64.
"	"	8.565	Genth, J. 27, 1233.
"	"	8.478	Becke, Z. K. M. 6, 205.
Zinc telluride	$\text{Zn Te}$	6.34, 15°	Margottet, J. C. S. 32, 570.
Cadmium telluride	$\text{Cd Te}$	6.20, 15°	"
Coloradoite	$\text{Hg Te}$	8.927	Genth, Z. K. M. 2, 4.
Tin telluride	$\text{Sn Te}$	6.478, 6°	Dirge, C. R. 96, 1793.
Altaite	$\text{Pb Te}$	8.159	G. Rose, P. A. 18, 64.
"	"	8.060	Genth, J. 27, 1233.
Antimony telluride	$\text{Sb}_2\text{Te}_3$	6.47, 13°	Bodeker and Giesecke, B. D. Z.
"	"	6.51	"
Joseite	$\text{Bi}_4\text{Te}$	7.924—7.936	Dana's Mineralogy.
Wehrlite	$\text{Bi}_3\text{Te}_2$	8.44	Wehrle, Dana's Min.
Tetradymite	$\text{Bi}_2\text{Te}_3$	7.237	Genth, J. 5, 833.
"	"	7.868	Jackson, J. 12, 770.
"	"	7.941	Genth, J. 13, 744.
"	"	7.942, 18°	Balch, J. 16, 794.
Calaverite	$\text{Au Te}_2$	9.043	Genth, Z. K. M. 2, 6.
Sylvanite	$\text{Au Ag Te}_2$	7.943	Genth, J. 27, 1233.
Petzite	$\text{Au Ag}_3\text{Te}_2$	9.010	"
"	"	9.020	"
Tapalpite	$\text{Ag}_2\text{Bi}_2\text{S Te}_2$	7.803	Rammelsberg, Z. G. S. 21, 81.

## XII. PHOSPHIDES.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Silver phosphide	$\text{Ag}_2\text{P}_3$	4.63	Schrotter, S. W. A. 1849, 301.
Zinc phosphide	$\text{Zn}_3\text{P}_2$	4.76	"
"	"	4.72	Hayer, J. C. S. 32, 113.
Tin monophosphide	$\text{Sn P}$	6.56	Schrotter, S. W. A. 1849, 301.
"	"	6.793	Natanson and Vortmann, Ber. 10, 1460.
Tin diphosphide	$\text{Sn P}_2$	4.91, 12°	Emmerling, Ber. 12, 155.
Chromium phosphide	$\text{Cr P}$	4.68	Martius, J. 11, 460.
Manganese phosphide	$\text{Mn}_3\text{P}_2$	5.951	Wöhler, J. 6, 359.
"	$\text{Mn}_3\text{P}$	4.94	Schrotter, S. W. A. 1849, 301.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Iron phosphide	$\text{Fe}_3 \text{P}$	6.28	Hvoslef. J. 9, 285.
" "	$\text{Fe}_3 \text{P}_4$	5.04	Freese. J. 20, 284.
Nickel phosphide	$\text{Ni}_3 \text{P}$	7.283	Jannetaz. J. C. S. 44, 651.
" "	$\text{Ni}_3 \text{P}_2$	5.99	Schrötter. S.W.A. 1849, 301.
Cobalt phosphide	$\text{Co}_3 \text{P}_2$	5.62	" "
Tricopper phosphide	$\text{Cu}_3 \text{P}$	6.75	" "
" "	"	6.59	Hvoslef. J. 9, 285.
" "	"	6.350	Sidot. J. R. C. 5, 75.
Copper monophosphide	$\text{Cu P}$	5.14	Emmerling. Ber. 12, 153.
Molybdenum monophosphide.	$\text{Mo P}$	6.167	Rautenberg. J. 12, 163.
Tungsten hemiphosphide	$\text{W}_2 \text{P}$	5.207	Wöhler. J. 4, 347.
Palladium diphosphide	$\text{Pd P}_2$	8.25	Schrötter. S. W. A. 1849, 301.
Platinum diphosphide	$\text{Pt P}_2$	8.77	" "
Iridium hemiphosphide *	$\text{Ir}_2 \text{P}$	13.768	Clarke. A. C. J. 5, 231.
Gold phosphide	$\text{Au}_2 \text{P}_3$	6.67	Schrötter. S. W. A. 1849, 301.

## XIII. ARSENIDES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silver arsenide	$\text{Ag As}$	8.51	Descamps. J. Ph. C. (4), 27, 424.
Trisilver diarsenide	$\text{Ag}_3 \text{As}_2$	9.01	" "
Trisilver arsenide	$\text{Ag}_3 \text{As}$	9.51	" "
" " Huntillite	"	7.47	Wurtz. Dana's Min., 3d App.
Tricopper diarsenide	$\text{Cu}_3 \text{As}_2$	6.94	Descamps. J. Ph. C. (4), 27, 424.
Dicopper arsenide	$\text{Cu}_2 \text{As}$	7.76	" "
Tricopper arsenide	$\text{Cu}_3 \text{As}$	7.81	" "
" " Domeykite	"	7.75	Genth. J. 15, 708.
Algodonite	$\text{Cu}_6 \text{As}$	7.603	Genth. A. J. S. (2), 33, 192.
"	"	6.902	Field. J. 10, 655.
Whitneyite	$\text{Cu}_9 \text{As}$	8.408	Genth. J. 12, 771.
"	"	8.246	} 21° Genth. J. 15, 708.
"	"	8.471	
Tricadmium arsenide	$\text{Cd}_3 \text{As}$	6.23	Descamps. J. Ph. C. (4), 27, 424.
Tin hemiarsenide	$\text{Sn}_2 \text{As}$	7.001, 18°	Bödeker. B. D. Z.
Tin diarsenide	$\text{Sn As}_2$	6.56	Descamps. J. Ph. C. (4), 27, 424.
Lead arsenide	$\text{Pb As}$	9.55	" "
Trilead tetrarsenide	$\text{Pb}_3 \text{As}_4$	9.65	" "

\* Commercial "cast iridium." Contains several per cent. of the phosphides of rhodium and ruthenium, with possibly a little phosphide of osmium.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Trilead diarsenide .....	$Pb_3 As_2$ .....	9.76 .....	Descamps, J. Ph. C. (4), 27, 424.
Kanelite .....	$Mn As_2$ .....	5.55 .....	Kane, Dana's Min.
Leucopyrite .....	$Fe_2 As_3$ .....	6.659 .....	Breithaupt, P. A. 9, 115.
" .....	" .....	6.848 .....	" .....
Lollingite .....	$Fe As_2$ .....	6.246, in mass .....	Behneke, J. 9, 831.
" .....	" .....	6.321, pulv. .....	" .....
" .....	" .....	7.409 .....	Hillebrand, A. J. S. (3), 27, 353.
Trinickel arsenide .....	$Ni_3 As_2$ .....	7.71 .....	Descamps, J. Ph. C. (4), 27, 424.
Niecolite .....	$Ni As_2$ .....	7.663 .....	Scheerer, P. A. 65, 292.
" .....	" .....	7.39, 16° .....	Edelman, Ann. d. Mines (4), 11, 55.
" .....	" .....	7.314 .....	Genth, J. 36, 1829.
Rammelsbergite .....	$Ni As_2$ .....	7.099—7.188 .....	Breithaupt, Dana's Min.
" .....	" .....	6.9 .....	McCoy, J. 37, 1965.
Smaltite .....	$Co As_2$ .....	6.84 .....	Rose, J. 5, 836.
Skutterudite .....	$Co As_3$ .....	6.78 .....	Scheerer, P. A. 12, 553.
Antimony hemiarsenide .....	$Sb_2 As$ .....	6.46 .....	Descamps, J. Ph. C. (4), 27, 424.
Allemontite .....	$Sb As_3$ .....	6.13 .....	Thomson, Dana's Min.
" .....	" .....	6.203 .....	Rammelsberg, Dana's Min.
Bismuth arsenide .....	$Bi_2 As_4$ .....	8.45 .....	Descamps, J. Ph. C. (4), 27, 424.
Gold arsenide .....	$Au_4 As_3$ .....	16.20 .....	" .....
O'Rileyite .....	$Cu_2 Fe_2 As_5$ .....	7.343—7.428 .....	Wadlie, J. 24, 1433.

## XIV. ANTIMONIDES.\*

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dyscrasite, Stibiotriargenite, " .....	$Ag_3 Sb_2$ .....	9.611 .....	Petersen, P. A. 137, 377.
Dyscrasite, Stibiohexargentite, " .....	$Ag_6 Sb_2$ .....	10.027 .....	" .....
Zinc antimonide .....	$Zn Sb$ .....	6.383 .....	Cooke, P. M. (4), 19, 413.
" .....	" .....	6.384 .....	" .....
Trizinc diantimonide .....	$Zn_3 Sb_2$ .....	6.327 .....	" .....
Breithauptite .....	$Ni Sb$ .....	7.541 .....	Breithaupt, Dana's Min.
Tin antimonide * .....	$Sn_2 Sb$ .....	7.07, 19° .....	Boeleker, B. D. Z.

\* Compare also the table of alloys.

## XV. SULPHIDES WITH ARSENIDES OR ANTIMONIDES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Arsenopyrite -----	Fe S As -----	6.269 -----	Kenngott. S. W. A. 9, 584.
“ -----	“ -----	6.21 -----	Vogel. J. 8, 907.
“ -----	“ -----	6.095, in mass. -----	} Potyka. J. 12, 772.
“ -----	“ -----	6.004, pulv. -----	
“ -----	“ -----	6.255 -----	Forbes. J. 18, 871.
“ -----	“ -----	6.16 -----	Zepharovich. S. W. A. 56 (1), 42.
“ -----	“ -----	6.05—6.07 -----	McCay. J. 37, 1905.
Pacite -----	Fe <sub>5</sub> S <sub>2</sub> As <sub>8</sub> -----	6.297 } -----	{ Breithaupt and Weisbach. B. H. Ztz. 25, 167.
“ -----	“ -----	6.303 } -----	
Glauconopyrite -----	Fe <sub>13</sub> S <sub>2</sub> As <sub>24</sub> -----	7.181 -----	Sandberger. J. P. C. (2), 1, 230.
Glauconodot -----	(Co Fe) S As -----	5.975—6.003 -----	Breithaupt. P. A. 67, 127.
“ -----	“ -----	5.905—6.011 -----	Schrauf and Dana. S. W. A. 69, 153.
Cobaltite -----	Co S As -----	6.0—6.3 -----	Dana's Mineralogy.
Gersdorffite -----	Ni S As -----	5.49 } -----	} Forbes. J. 21, 997.
“ -----	“ -----	5.65 } -----	
“ -----	“ -----	6.1977 -----	Sipöcz. Ber. 19, 95.
Ullmannite -----	Ni S Sb -----	6.506, 20° -----	Raummelsberg. P. A. 64, 189.
“ -----	“ -----	6.803 -----	} Jannasch. J. 36, 1832.
“ -----	“ -----	6.882 -----	
Corynite -----	Ni S (As Sb) -----	5.994 -----	Zepharovich. J. 18, 872.
Wolfachite -----	“ -----	6.372 -----	Sandberger. J. 22, 1193.
Alloclasite -----	Co <sub>3</sub> S <sub>4</sub> Bi <sub>4</sub> As <sub>8</sub> -----	6.6 -----	Tschermak. J. 49, 919.
“ -----	“ -----	6.23—6.5 -----	Frenzel. J. 36, 1831.

## XVI. HYDRIDES, BORIDES, CARBIDES, SILICIDES, NITRIDES, ETC.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium hydride -----	Na <sub>2</sub> H -----	0.959 -----	Troost and Haute- feuille. C. R. 78, 970.
Palladium hydride -----	Pd <sub>3</sub> H <sub>2</sub> -----	10.8033 -----	Dewar. P. M. (4), 47, 334.
“ “ -----	Pd <sub>2</sub> H -----	11.06 -----	Troost and Haute- feuille. C. R. 78, 970.
Columbium hydride -----	Cb H -----	6.0 to 6.6 -----	{ Marignac. J. 21, 214. Supposed to be metal.
“ “ -----	“ -----	6.15 to 7.37 -----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Platinum boride	Pt B <sub>2</sub>	17.32	Martius. J. 11, 210.
Iron silico-carbide	Fe <sub>3</sub> Si <sub>2</sub> C	6.6	Colson. J. C. S. 42, 933.
Titanium carbide	Ti C, impure	5.10	Shimer. J. A. C. 1, 4.
Iron silicide	Fe <sub>2</sub> Si	6.611	Hahn. J. 17, 264.
Platinum silicide	Pt <sub>3</sub> Si <sub>2</sub>	14.1	Colson. Ber. 15, 724.
" "	Pt <sub>9</sub> Si	18.97	Memminger. A. C. J. 7, 172.
Aluminum titanide	Al <sub>4</sub> Ti	3.11, 16°	Levy. C. R. 106, 66.
Aluminum zirconide (?)	Al <sub>4</sub> Zr, or Al <sub>6</sub> Zr <sub>2</sub> Si	3.629	Melliss. Göttingen Doct. Diss., 1870.
Ammonia. Liquefied	N H <sub>3</sub>	.731, 15°-5.	Faraday. P. T. 1845, 155.
" "	"	.6234, 0°	Jolly. J. 14, 165.
" "	"	.6492, —10°	
" "	"	.6429, —5	
" "	"	.6364, 0	
" "	"	.6298, 5°	
" "	"	.6239, 10°	
" "	"	.6169, 15°	
" "	"	.6089, 20°	
Titanium nitride	Ti <sub>2</sub> N <sub>2</sub>	5.28, 18°	Friedel and Guérin. C. R. 82, 974.
Iron nitride. Impure	Fe <sub>3</sub> N <sub>2</sub>	3.147	Silvestri. Ber. 8, 1356.

## XVII. HYDROXIDES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium hydroxide	Na O H	2.130	Filhol. Ann. (3), 21, 415.
" "	"	1.723	W. C. Smith. Am. J. P. 53, 145.
" "	2 Na O H, 7 H <sub>2</sub> O	1.405	Hermes. J. 16, 178.
Potassium hydroxide	K O H	2.100	Dalton.
" "	"	2.044	Filhol. Ann. (3), 21, 415.
" "	"	1.958	W. C. Smith. Am. J. P. 53, 145.
Brucite	Mg (O H) <sub>2</sub>	2.36	Hermann. J. 14, 979.
"	"	2.379	Beck. J. 15, 718.
" Artif. cryst.	"	2.36, 15°	Schulten. C. R. 101, 72.
Zinc hydroxide	Zn (O H) <sub>2</sub>	2.677	Nickles. J. 1, 435.
" "	"	3.073	Filhol. Ann. (3), 21, 415.
Cadmium hydroxide. Cryst.	Cd (O H) <sub>2</sub>	4.79, 15°	Schulten. C. R. 101, 72.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Calcium hydroxide	$\text{Ca (O H)}_2$	2.078	Filhol. Ann. (3), 21, 415.
Strontium hydroxide	$\text{Sr (O H)}_2$	3.625	" "
" "	$\text{Sr (O H)}_2 \cdot 8 \text{ H}_2 \text{O}$	1.396	" "
" "		1.911, 16°	Filhol. J. P. C. 36, 37.
Barium hydroxide	$\text{Ba (O H)}_2$	4.495	Filhol. Ann. (3), 21, 415.
" "	$\text{Ba (O H)}_2 \cdot 8 \text{ H}_2 \text{O}$	1.656	" "
" "		2.388, 16°	Filhol. J. P. C. 36, 37.
Lead hydroxide	$\text{Pb (O H)}_2 \cdot 2 \text{ Pb O}$	7.592, 0°	Ditte. J. C. S. 42, 928.
Lead oxyhydroxide	$\text{Pb (O H)}_2 \text{O}$	6.267	Wernicke. J. P. C. (2), 2, 419.
Manganese hydroxide. Cryst.	$\text{Mn (O H)}_2$	3.258, 15°	Schulten. C. R. 105, 1266.
Manganese oxyhydroxide	$\text{Mn (O H)}_2 \text{O}$	2.564	Wernicke. J. P. C. (2), 2, 419.
" "	"	2.596	
Manganite	$\text{Mn}_2 (\text{O H})_2 \text{O}_2$	4.335	Rammelsberg. J. 18, 878.
Manganese hydroxide	$\text{Mn}_{12} \text{H}_2 \text{O}_{24}$	4.750	Voley. J. C. S. 41, 65.
" "	"	4.800	
" "	$\text{Mn}_{24} \text{H}_{16} \text{O}_{33}$	4.671	" "
" "	"	4.681	
Turgite	$\text{Fe}_4 (\text{O H})_2 \text{O}_5$	3.56—3.74	Hermann. Dana's Min.
"	"	4.681	Bergemann. J. 12, 771.
"	"	4.14	Brush. A. J. S. (2), 44, 219.
Ferric oxyhydroxide	$\text{Fe}_2 (\text{O H})_2 \text{O}_2$	2.91	Brunck and Graebe. Ber. 13, 725.
" "	"	2.92	
" " Göthite	"	4.11	Yorke. P. M. (3), 27, 265—267.
" " "	"	4.19	
" " "	"	4.24	
Limonite	$\text{Fe}_4 (\text{O H})_6 \text{O}_3$	3.6—4.0	Dana's Mineralogy. Bergemann. Dana's Min.
"	"	3.908	
Ferric hydroxide	$\text{Fe}_2 (\text{O H})_6$	3.77, precip.	Yorke. P. M. (3), 27, 269.
" " Limnite	"	2.69	Church. J. 18, 879.
Nickelic oxyhydroxide	$\text{Ni}_2 (\text{O H})_4 \text{O}$	2.741	Wernicke. J. P. C. (2), 2, 419.
Cobaltic oxyhydroxide	$\text{Co}_2 (\text{O H})_4 \text{O}$	2.483	" "
Heterogenite	$\text{Co}_3 \text{O}_7 \cdot 6 \text{ H}_2 \text{O}$	3.44	Frenzel. J. P. C. (2), 5, 404.
Copper hydroxide	$\text{Cu (O H)}_2$	3.368	Schröder. Dm. 1873.
Diaspore	$\text{Al (O H) O}$	3.39	Jackson. A. J. S. (2), 42, 108.
"	"	3.343	Shepard. A. J. S. (2), 50, 96.
Gibbsite	$\text{Al (O H)}_3$	2.387	Hermann. J. 1, 1164.
"	"	2.389	Silliman, Jr. J. 2, 389.
Stibiconite	$\text{Sb}_2 (\text{O H})_2 \text{O}_3$	5.28	Blum and Delfs. J. P. C. 40, 318.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Antimonic hydroxide	$\text{Sb}(\text{O H})_3$	6.6	Boullay, Dana's Min.
Bismuth oxyhydroxide	$\text{Bi}(\text{O H})_2\text{O}$	5.571	Wernicke, J. P. C. (2), 2, 419.
" "	"	5.8, 20	Muir, Hollmeier, and Robbs, J. C. S. 39, 32.
Metabismuthic hydroxide	$\text{Bi}(\text{O H})_3\text{O}$	5.75, 20	" "
Uranyl hydroxide	$\text{U}(\text{O H})_2\text{O}$	5.929, 15	Mahguth, J. P. C. 29, 233.
Eliasite	$\text{U}(\text{O H})_4\text{O}$	4.987—4.237	Zepharovich, Dana's Min.
Gummite	$\text{U}(\text{O H})_6$	4.9—4.20	Breithaupt, Dana's Min.
Chalcophanite	$\text{Zn Mn}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$	3.907	Moore, J. C. S. 36, 17.
Namapualite	$\text{Cu}_3\text{Al}(\text{O H})_4 \cdot 2\text{H}_2\text{O}$	2.49	Church, J. C. S. 23, 1.
Hydrotauberite	$\text{AlMg}_2(\text{O H})_4 \cdot 3\text{H}_2\text{O}$	2.91	Hermann, J. 1, 1198.

## XVIII. CHLORATES AND PERCHLORATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen chlorate, or chloric acid.	$\text{H Cl O}_3 \cdot 7\text{H}_2\text{O}$	1.282, 14, 12	Kammerer, P. A. 138, 290.
Sodium chlorate	$\text{Na Cl O}_3$	2.467	Berthelot.
" "	"	2.289	Bodeker, B. D. Z.
Potassium chlorate	$\text{K Cl O}_3$	2.32643, 1	Playfair and Joyle, J. C. S. 1, 137.
" "	"	2.350, 17, 5	Kramers, J. 10, 67.
" "	"	2.325	Baignet, J. 14, 15.
" "	"	2.323	Hoiker, P. M. 3, 27, 213.
" "	"	2.325, m. of 5	
" "	"	2.246 (px)	Schroder, Dn. 1873.
" "	"	2.364 (trimes)	
" "	"	2.167	W. C. Smith, Am. J. P. 53, 145.
Silver chlorate	$\text{Ag Cl O}_3$	4.439	Schroder, J. 12, 12.
" "	"	4.449	Toppe, B. S. C. 19, 246.
Thallium chlorate	$\text{Tl Cl O}_3$	5.5947, 9	Marr, C. N. 33, 156.
Strontium chlorate	$\text{Sr Cl}_2\text{O}_6$	3.150	Schroder, Dn. 1873.
" "	"	3.154	
Barium chlorate	$\text{Ba Cl}_2\text{O}_6 \cdot \text{H}_2\text{O}$	2.988, 15	Bodeker, B. D. Z.
" "	"	3.214	
" "	"	3.188	Schroder, Dn. 1873.
Lead chlorate	$\text{Pb Cl}_2\text{O}_6 \cdot \text{H}_2\text{O}$	4.018	
" "	"	4.030	
" "	"	4.063	

\*Kammerer also gives figures for other hydrates of chloric acid.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lead chlorate -----	$\text{Pb Cl}_2 \text{ O}_6 \cdot \text{H}_2 \text{ O}$ -----	3.989 -----	Topsoë. B. S. C. 19, 246.
Mercurous chlorate -----	$\text{Hg Cl O}_3$ -----	6.409 -----	Schröder. Dm. 1873.
Mercuric chlorate -----	$\text{Hg Cl}_2 \text{ O}_6$ -----	4.998 -----	" "
Basic mercuric chlorate -----	$\text{Hg}_2 \text{ Cl}_2 \text{ O}_7 \cdot \text{H}_2 \text{ O}$ -----	5.151 -----	Topsoë. B. S. C. 19, 246.
Hydrogen perchlorate, or perchloric acid.	$\text{H Cl O}_4$ -----	1.782, 15°.5 -----	Roscoe. J. 14, 146.
" " -----	$\text{H Cl O}_4 \cdot \text{H}_2 \text{ O}$ -----	1.811, 50° -----	" "
Lithium perchlorate -----	$\text{Li Cl O}_4$ -----	1.841 -----	Wyrouboff. B. S. M. 6, 53.
Potassium perchlorate -----	$\text{K Cl O}_4$ -----	2.528 } -----	Schröder. Dm. 1873.
" " -----	" -----	2.550 } -----	
" " -----	" -----	2.520, m. of 6 } -----	
" " -----	" -----	2.510 } Ex- -----	
" " -----	" -----	2.537 } tremes -----	
Ammonium perchlorate -----	$\text{Am Cl O}_4$ -----	1.885, 25° -----	Stephan. F. W. C.
Thallium perchlorate -----	$\text{Tl Cl O}_4$ -----	4.844, 15°.5 -----	Roscoe. C. N. 14, 217.

## XIX. BROMATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium bromate -----	$\text{Na Br O}_3$ -----	3.339, 17°.5 -----	Kremers. J. 10, 67.
Potassium bromate -----	$\text{K Br O}_3$ -----	3.271, 17°.5 -----	" "
" " -----	" -----	3.218 -----	Topsoë. B. S. C. 19, 246.
" " -----	" -----	3.323, 19° -----	Storer. F. W. C.
Silver bromate -----	$\text{Ag Br O}_3$ -----	5.1983, 16° -----	" "
" " -----	" -----	5.2153, 18° -----	
Magnesium bromate -----	$\text{Mg Br}_2 \text{ O}_6 \cdot 6 \text{ H}_2 \text{ O}$ -----	2.289 -----	Topsoë. B. S. C. 19, 246.
Zinc bromate -----	$\text{Zn Br}_2 \text{ O}_6 \cdot 6 \text{ H}_2 \text{ O}$ -----	2.566 -----	Topsoë. C. C. 4, 76.
Cadmium bromate -----	$\text{Cd Br}_2 \text{ O}_6 \cdot 2 \text{ H}_2 \text{ O}$ -----	3.758 -----	Topsoë. B. S. C. 19, 246.
Basic mercuric bromate -----	$\text{Hg}_2 \text{ Br}_2 \text{ O}_7 \cdot \text{H}_2 \text{ O}$ -----	5.815 -----	Topsoë. C. C. 4, 76.
Calcium bromate -----	$\text{Ca Br}_2 \text{ O}_6 \cdot \text{H}_2 \text{ O}$ -----	3.329 -----	" "
Strontium bromate -----	$\text{Sr Br}_2 \text{ O}_6 \cdot \text{H}_2 \text{ O}$ -----	3.773 -----	" "
Barium bromate -----	$\text{Ba Br}_2 \text{ O}_6$ -----	4.0395, 17° -----	Storer. F. W. C.
" " -----	" -----	3.9918, 18° -----	
" " -----	$\text{Ba Br}_2 \text{ O}_6 \cdot \text{H}_2 \text{ O}$ -----	3.820 -----	Topsoë. C. C. 4, 76.
Lead bromate -----	$\text{Pb Br}_2 \text{ O}_6 \cdot \text{H}_2 \text{ O}$ -----	4.950 -----	" "
Nickel bromate -----	$\text{Ni Br}_2 \text{ O}_6 \cdot 6 \text{ H}_2 \text{ O}$ -----	2.575 -----	" "
Copper bromate -----	$\text{Cu Br}_2 \text{ O}_6 \cdot 6 \text{ H}_2 \text{ O}$ -----	2.583 -----	" "

## XX. IODATES AND PERIODATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen iodate,* or iodic acid.	$\text{H I O}_3$	4.869, 0° ( ) 4.816, 50°-8 ( )	Ditte. Ann. (1), 21, 22.
Sodium iodate	$\text{Na I O}_3$	4.277, 17°-5	Kremers. J. 10, 67.
Potassium iodate	$\text{K I O}_3$	3.979, 17°-5	" "
" "	"	2.601 ( )	Ditte. Ann. (1), 21, 48.
" "	"	2.802, 48°	Clarke.
Ammonium iodate	$\text{Am I O}_3$	3.3372, 12°-5 ( ) 3.3085, 21° ( )	Fullerton. F. W. C.
Silver iodate. Precip.	$\text{Ag I O}_3$	5.4023, 16°-5 ( )	" "
" " Cryst. from ammonia.	"	5.6475, 41°-5 ( )	" "
Magnesium iodate	$\text{Mg I}_2 \text{ O}_6 \cdot 4 \text{ H}_2 \text{ O}$	3.283, 13°-5	Bishop. F. W. C.
Barium iodate	$\text{Ba I}_2 \text{ O}_6$	5.2299, 18°	Fullerton. F. W. C.
Lead iodate	$\text{Pb I}_2 \text{ O}_6$	6.209 ( )	Schroder. Dm. 1873.
" "	"	6.248 ( )	
" "	"	6.257 ( )	
" "	"	6.155, 20°	Fullerton. F. W. C.
Nickel iodate	$\text{Ni I}_2 \text{ O}_6 \cdot 6 \text{ H}_2 \text{ O}$	3.6954, 22°	" "
Cobalt iodate	$\text{Co I}_2 \text{ O}_6 \cdot \text{H}_2 \text{ O}$	5.008, 18°	" "
" "	$\text{Co I}_2 \text{ O}_6 \cdot 6 \text{ H}_2 \text{ O}$	3.6659, 18°-5	" "
Didymium periodate	$\text{Di I O}_8 \cdot 4 \text{ H}_2 \text{ O}$	3.755 ( ) 3.761 ( )	Cleve. F. N. A. 1885.
" "	"	21°-2	
Samarium periodate	$\text{Sm I O}_8 \cdot 4 \text{ H}_2 \text{ O}$	3.793, 21°-2	" "

## XXI. THIOSULPHATES,† SULPHITES, DITHIONATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium thiosulphate	$\text{Na}_2 \text{ S}_2 \text{ O}_3 \cdot 5 \text{ H}_2 \text{ O}$	1.672 ( )	Buignet. J. 11, 15.
" "	"	1.736, 10°	Kepp. J. 8, 45.
" "	"	1.734 ( )	Schiff. J. 12, 41.
" "	"	1.723 ( )	W. C. Smith. Am. J. P. 53, 148.
Potassium thiosulphate	$\text{K}_2 \text{ S}_2 \text{ O}_3$	2.590 ( )	Buignet. J. 11, 15.
Magnesium thiosulphate	$\text{Mg S}_2 \text{ O}_3 \cdot 6 \text{ H}_2 \text{ O}$	1.818, 24°	Oliver. F. W. C.
Calcium thiosulphate	$\text{Ca S}_2 \text{ O}_3 \cdot 6 \text{ H}_2 \text{ O}$	1.8715, 13°-5	Richardson. F. W. C.
" "	"	1.8728, 16° ( )	
Strontium thiosulphate	$\text{Sr S}_2 \text{ O}_3 \cdot 6 \text{ H}_2 \text{ O}$	2.1778, 17°	" "
Barium thiosulphate	$\text{Ba S}_2 \text{ O}_3 \cdot \text{H}_2 \text{ O}$	3.4461, 16°	" "
" "	"	3.4486, 18° ( )	" "
Cobalt thiosulphate	$\text{Co S}_2 \text{ O}_3 \cdot 6 \text{ H}_2 \text{ O}$	1.935, 25°	Oliver. F. W. C.
Hydrogen sulphite or sulphurous acid.	$\text{H}_2 \text{ S O}_3 \cdot 6 \text{ H}_2 \text{ O}$	1.147, 15° cryst.	Geuther. A. C. P. 224, 218.

\* For various hydrates of iodic acid see Kaemmerer, P. A. 138, 399.

† Commonly called hyposulphites.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium sulphite-----	$\text{Na}_2 \text{S O}_3 \cdot 10 \text{H}_2 \text{O}$ -----	1.561 -----	Buignet. J. 14, 15.
Cuprous sulphite. Red ---	$\text{Cu}_2 \text{S O}_3 \cdot \text{H}_2 \text{O}$ -----	4.46 -----	Etard. Ber. 15, 2233.
“ “ White-----	“-----	3.83, 15° -----	“ “
Hydrogen dithionate, or dithionic acid.	$\text{H}_2 \text{S}_2 \text{O}_6 + \text{aq.}$ -----	1.347 -----	Gay Lussac. Gm. H. 2, 175.
Lithium dithionate-----	$\text{Li}_2 \text{S}_2 \text{O}_6 \cdot 2 \text{H}_2 \text{O}$ -----	2.158 -----	Topsoë. C. C. 4, 76.
Sodium dithionate-----	$\text{Na}_2 \text{S}_2 \text{O}_6 \cdot 2 \text{H}_2 \text{O}$ -----	2.189 -----	Topsoë. B. S. C. 19, 246.
“ “-----	“-----	2.175, 11° -----	Baker. C. N. 36, 203.
Potassium dithionate ---	$\text{K}_2 \text{S}_2 \text{O}_6$ -----	2.277 -----	Topsoë. B. S. C. 19, 246.
Ammonium dithionate-----	$\text{Am}_2 \text{S}_2 \text{O}_6$ -----	1.704 -----	Topsoë. C. C. 4, 76.
Silver dithionate-----	$\text{Ag}_2 \text{S}_2 \text{O}_6 \cdot 2 \text{H}_2 \text{O}$ -----	3.605 -----	“ “
Magnesium dithionate-----	$\text{Mg}^c \text{S}_2 \text{O}_6 \cdot 6 \text{H}_2 \text{O}$ -----	1.666 -----	Topsoë. B. S. C. 19, 246.
Zinc dithionate-----	$\text{Zn S}_2 \text{O}_6 \cdot 6 \text{H}_2 \text{O}$ -----	1.915 -----	Topsoë. C. C. 4, 76.
Cadmium dithionate-----	$\text{Cd S}_2 \text{O}_6 \cdot 6 \text{H}_2 \text{O}$ -----	2.272 -----	“ “
Calcium dithionate-----	$\text{Ca S}_2 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$ -----	2.180 -----	Topsoë. B. S. C. 19, 246.
“ “-----	“-----	2.176, 11° -----	Baker. C. N. 36, 203.
Strontium dithionate-----	$\text{Sr S}_2 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$ -----	2.373 -----	Topsoë. C. C. 4, 76.
Barium dithionate-----	$\text{Ba S}_2 \text{O}_6 \cdot 2 \text{H}_2 \text{O}$ -----	4.536, 13°.5-----	Baker. C. N. 36, 203.
“ “-----	$\text{Ba S}_2 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$ -----	3.142 -----	Topsoë. C. C. 4, 76.
“ “-----	“-----	3.055, 24°.5-----	Stephan. F. W. C.
Lead dithionate-----	$\text{Pb S}_2 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$ -----	3.245 -----	Topsoë. C. C. 4, 76.
“ “-----	“-----	3.259, 11° -----	Baker. C. N. 36, 203.
Manganese dithionate-----	$\text{Mn S}_2 \text{O}_6 \cdot 6 \text{H}_2 \text{O}$ -----	1.757 -----	Topsoë. C. C. 4, 76.
Iron dithionate-----	$\text{Fe S}_2 \text{O}_6 \cdot 7 \text{H}_2 \text{O}$ -----	1.875 -----	“ “
Nickel dithionate-----	$\text{Ni S}_2 \text{O}_6 \cdot 6 \text{H}_2 \text{O}$ -----	1.908 -----	“ “
Cobalt dithionate-----	$\text{Co S}_2 \text{O}_6 \cdot 8 \text{H}_2 \text{O}$ -----	1.815 -----	“ “

## XXII. SULPHATES.

## 1st. Simple Sulphates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen sulphate, or sulphuric acid.	$\text{H}_2 \text{S O}_4$ -----	1.857 -----	Bineau. Ann. (3), 24, 337.
“ “-----	“-----	1.8485 -----	Ure. Schw. J. 35, 444.
“ “-----	“-----	1.854, 0° -----	Marignac. J. 6, 325.
“ “-----	“-----	1.842, 12° -----	
“ “-----	“-----	1.834, 24° -----	
“ “-----	“-----	1.857, 0° -----	Kolb. Z. A. C. 12, 333.
“ “-----	“-----	1.85289, 0° -----	Marignac. Ann. (4), 22, 420.
“ “-----	“-----	1.8354, 18° -----	Kohlrausch. P. A. 159, 243.
“ “-----	“-----	1.82730, 23° -----	Nasini. Ber. 15, 2885.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen sulphate, or sulphuric acid.	$\text{H}_2\text{S O}_4$	1.854, 0°	Schertel. Ber. 15, 2734.
"	"	1.8384, 15°	Lunge and Naef. Ber. 16, 953.
"	"	1.83295, 19.02	Mendelejeff. Ber. 17, ref. 304.
"	"	1.8528, 0°	Mendelejeff. Ber. 19, 380.
"	"	1.83904, 15°	Perkin. J. C. S. 49, 777.
"	"	1.83562, 20°	
"	"	1.83265, 25°	
"	$\text{H}_2\text{S O}_4 \cdot \text{H}_2\text{O}$	1.784, 8°	Wackenroder. J. 2, 249.
"	"	1.7943, 0°	Mendelejeff. Ber. 19, 380.
"	"	1.77806, 15°	Perkin. J. C. S. 49, 777.
"	"	1.77423, 20°	
"	"	1.77071, 25°	
"	$\text{H}_2\text{S O}_4 \cdot 2\text{H}_2\text{O}$	1.62	Watts' Dictionary.
"	"	1.6655, 0°	Mendelejeff. Ber. 19, 380.
"	"	1.65084, 15°	Perkin. J. C. S. 49, 777.
"	"	1.64754, 20°	
"	"	1.64467, 25°	
"	$\text{H}_2\text{S O}_4 \cdot 3\text{H}_2\text{O}$	1.55064, 15°	" "
"	"	1.54754, 20°	
"	"	1.54466, 25°	
Hydrogen pyrosulphate	$\text{H}_2\text{S}_2\text{O}_7$	1.9	Watts' Dictionary.
Hydrogen tetrasulphate	$\text{H}_2\text{S}_4\text{O}_{13} + 3\text{S O}_3$	1.983	Weber. P. A. 159, 325.
Lithium sulphate	$\text{Li}_2\text{S O}_4$	2.210	Kremers. J. 10, 67.
"	"	2.21, 15°	Brauner. P. M. (5), 11, 67.
"	$\text{Li}_2\text{S O}_4 \cdot \text{H}_2\text{O}$	2.02	Troost. J. 10, 141.
"	"	2.052, 21°	Pettersson. U. N. A. 1874
"	"	2.056, 20°	
"	"	2.066, 20°	
Sodium sulphate	$\text{Na}_2\text{S O}_4$	2.462	Mohs. Quoted by Schroder.
"	"	2.67	Breithaupt. Quoted by Schroder.
"	"	2.73	Cordier. Quoted by Schroder.
"	"	2.640	Thomson. Ann. Phil. (2), 10, 435.
"	"	2.6343	Karsten. Schw. J. 65, 394.
"	"	2.597	Playfair and Joule. M. C. S. 2, 401.
"	"	2.629	Pillod. Ann. (3), 24, 415.
"	"	2.654	Kremers. J. 5, 15.
"	"	2.658	
"	"	2.674	
"	"	2.684	Schroder. P. A. 106, 226.
"	"	2.693, m. of 3	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium sulphate	$\text{Na}_2\text{S O}_4$	2.681, 20°.7	Favre and Valson. C. R. 77, 579.
" "	"	2.677 } 17° {	Pettersson. U. N.
" "	"	2.687 } 17° {	A. 1874.
" "	"	2.66180, cryst.	Nicol. P. M. (5), 15, 94.
" "	"	at 40°	
" "	"	2.66372, cryst.	
" "	"	at 110°	Braun. J. C. S. (2), 13, 31.
" "	"	2.104, at the melting p't.	
" "	$\text{Na}_2\text{S O}_4 \cdot 10\text{H}_2\text{O}$	1.4457	Hassenfratz. Ann. 28, 3.
" "	"	1.350	Thomson. Ann. Phil. (2), 10, 435.
" "	"	1.469, m. of 2	Playfair and Joule. M. C. S. 2, 401.
" "	"	1.520	Filhol. Ann. (3), 21, 415.
" "	"	1.465	Schiff.
" "	"	1.471	Buignet. J. 14, 15.
" "	"	1.4608	Stolba. J. P. C. 97, 503.
" "	"	1.4595	
" "	"	1.455, 26°.5	Favre and Valson. C. R. 77, 579.
" "	"	1.485, 19°	Pettersson. U. N. A. 1874.
" "	"	1.492, 20°	
Potassium sulphate	$\text{K}_2\text{S O}_4$	2.636	Watson.
" "	"	2.4073	Hassenfratz. Ann. 28, 3.
" "	"	2.880	Thomson. Ann. Phil. (2), 10, 435.
" "	"	2.6232	Karsten. Schw. J. 65, 394.
" "	"	2.400	Jacquelain. A. C. P. 32, 234.
" "	"	2.662	Kopp. A. C. P. 36, 1.
" "	"	2.640	Playfair and Joule. M. C. S. 2, 401.
" "	"	2.65606, 4°	Playfair and Joule. J. C. S. 1, 132.
" "	"	2.625	Filhol. Ann. (3), 21, 415.
" " Cryst.	"	2.644	Penny. J. 8, 333.
" " After fu- sion.	"	2.657	
" "	"	2.676	Holker. P. M. (3), 27, 213.
" "	"	2.653	Schiff. A. C. P. 107, 64.
" "	"	2.658	Schröder. P. A. 106, 226.
" "	"	2.572	Buignet. J. 14, 15.
" "	"	2.645	Stolba. J. P. C. 97, 503.
" "	"	2.648	Topsoë and Christ- iansen.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium sulphate	$K_2S_2O_4$	2.660, 173.1	Pettersson, U. N. A. 1874.
"	"	2.667, 183.2	
"	"	2.669, 183.2	
"	"	2.665, 183.5	
"	"	2.653, 14	
"	"	2.715	W. C. Smith, Am. J. P. 45, 118.
"	"	2.1, fused	Quinke, P. A. 158, 141.
"	"	2.6651, 0°	Spring, Ber. 15, 1940. Details in Bull. Acad. Bel- gique IV., No. 8, 1882.
"	"	2.6627, 10°	
"	"	2.6603, 20°	
"	"	2.6577, 30°	
"	"	2.6551, 40°	
"	"	2.6522, 50°	
"	"	2.6492, 60°	
"	"	2.6456, 70°	
"	"	2.6420, 80°	
"	"	2.6396, 90°	
"	"	2.6311, 100°	
"	Not pressed	2.653, 215°	Spring, Ber. 16, 2724.
"	Once "	2.651, 222°	
"	Twice "	2.656, 222°	
Potassium pyrosulphate	$K_2S_2O_7$	2.277	Jacquelain, A. C. P. 32, 234.
Rubidium sulphate	$Rb_2S_2O_4$	3.639, 167.8	Pettersson, U. N. A. 1874.
"	"	3.641, 167.8	
"	"	3.6438, 0°	
"	"	3.6402, 10°	
"	"	3.6367, 20°	
"	"	3.6333, 30°	Spring, Ber. 15, 1940. Details in Bull. Acad. Bel- gique IV., No. 8, 1882.
"	"	3.6299, 40°	
"	"	3.6256, 50°	
"	"	3.6220, 60°	
"	"	3.6181, 70°	
"	"	3.6142, 80°	
"	"	3.6089, 90°	
"	"	3.6026, 100°	
Cesium sulphate	$Cs_2S_2O_4$	4.105, 193.2	Pettersson, U. N. A. 1874.
Ammonium sulphate	$Am_2S_2O_4$	1.7676	Hassenfratz, Ann. 28, 3.
"	"	1.76	Kopp, J. 11, 10.
"	"	1.78	
"	"	1.750	
"	"	1.76147, 1°	Playfair and Joule, M. C. S. 2, 401.
"	"	1.628	Playfair and Joule, J. C. S. 1, 138.
"	"	1.771, m. of 2	Schiff, A. C. P. 107, 64.
"	"	1.771, m. of 2	Schroder, P. A. 106, 226.
"	"	1.750	Baignet, J. 14, 15.
"	"	1.770, m. of 4	Pettersson, U. N. A. 1874.
"	"	1.766 (extremes)	
"	"	1.775 (17-18°)	
"	"	1.7	W. C. Smith, Am. J. P. 53, 115.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ammonium sulphate	$\text{Am}_2 \text{S O}_4$	1.765, 20°.5	Wilson. F. W. C
" "	"	1.773	Schröder. Ber. 11, 2211.
" "	"	1.7763, 0°	Spring. Ber. 15, 1940. Details in Bull. Acad. Bel gique. IV., No. 8, 1882.
" "	"	1.7748, 10°	
" "	"	1.7734, 20°	
" "	"	1.7719, 30°	
" "	"	1.7703, 40°	
" "	"	1.7685, 50°	
" "	"	1.7667, 60°	
" "	"	1.7641, 70°	
" "	"	1.7617, 80°	
" "	"	1.7593, 90°	
" "	"	1.7567, 100°	Spring. Ber. 16, 2724.
" Not pressed	"	1.773, 20°	
" Once "	"	1.750, 22°	
" Twice "	"	1.760, 22°	
Maseagnite	$\text{Am}_2 \text{S O}_4 \cdot \text{H}_2 \text{O}$	1.72—1.73	Dana's Mineralogy.
Silver sulphate	$\text{Ag}_2 \text{S O}_4$	5.341	Karsten. Schw. J. 65, 394.
" "	"	5.322	Playfair and Joule. M. C. S. 2, 401.
" "	"	5.410	Filhol. Ann. (3), 21, 415.
" "	"	5.425	Schröder. P. A. 106, 226.
" "	"	5.49 } 11°	Pettersson. U. N. A. 1874.
" "	"	5.54 }	
Thallium sulphate	$\text{Th}_2 \text{S O}_4$	6.77	Lamy. J. 15, 186.
" "	"	6.603	Lamy and Des Cloi-zeaux. Nature 1, 116.
" "	"	6.79, 17°.8	Pettersson. U. N. A. 1874.
" "	"	6.81, 17°.2	
" "	"	6.83, 17°	
Glucinum sulphate	$\text{Gl S O}_4$	2.443	Nilson and Petters-son. C. R. 91, 232.
" "	$\text{Gl S O}_4 \cdot 4 \text{H}_2 \text{O}$	1.725	Topsoë. C. C. 4, 76.
" "	"	1.6743, 22°	H. Stallo. F. W. C.
" "	"	1.713	Nilson and Petters-son. C. R. 91, 232.
Magnesium sulphate	$\text{Mg S O}_4$	2.6066	Karsten. Schw. J. 65, 394.
" "	"	2.706, m. of 2	Playfair and Joule. M. C. S. 2, 401.
" "	"	2.628	Filhol. Ann. (3), 21, 415.
" "	"	2.675, 16°	Pape. P. A. 120, 367.
" "	"	2.770, 13°.8	Pettersson. U. N. A. 1876.
" "	"	2.795, 14°	
" "	"	2.488	Schröder. J. P. C. (2), 19, 266. Two modifications.
" "	"	2.471	
" "	"	2.829	
" "	"	2.709, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Mg S O}_4 \cdot \text{H}_2 \text{O}$	2.517, native	Bischof. Dana's Min.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Magnesium sulphate	$\text{MgSO}_4 \cdot \text{H}_2\text{O}$	2.281, 16°	Pape, P. A. 120, 369.
"	"	2.339, 14°	Pettersson, U. N. A.
"	"	2.340, 16°.5	1876.
"	"	2.385	Schroder, J. P. C.
"	"	2.478, m. of 2	(2), 19, 266.
"	"	2.415, 15°	Playfair, J. C. S.
"	"	"	37, 102.
"	"	"	Thorpe and Watts.
"	"	$\text{MgSO}_4 \cdot 2\text{H}_2\text{O}$	J. C. S. 37, 102.
"	"	2.279	Playfair, J. C. S.
"	"	"	37, 102.
"	"	2.373, 15°	Thorpe and Watts.
"	"	"	J. C. S. 37, 102.
"	"	$\text{MgSO}_4 \cdot 5\text{H}_2\text{O}$	1.869, m. of 2.
"	"	"	Playfair, J. C. S.
"	"	$\text{MgSO}_4 \cdot 6\text{H}_2\text{O}$	1.751
"	"	"	"
"	"	1.731, 15°	Thorpe and Watts.
"	"	"	J. C. S. 37, 102.
"	Two modifications.	1.6151	Schulze, P. A. (2),
"	"	1.8981	31, 229.
"	"	$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	1.6603
"	"	"	Hasenfratz, Ann.
"	"	"	28, 3.
"	"	1.751	Mohs. See Bottger.
"	"	1.671	Kepp, A. C. P.
"	"	"	36, 1.
"	"	1.660	Playfair and Joule.
"	"	"	M. C. S. 2, 401.
"	"	1.6829, 4°	Playfair and Joule.
"	"	"	J. C. S. 1, 138.
"	"	1.751	Filhol, Ann. (3), 21,
"	"	"	415.
"	"	1.685	Schiff, A. C. P. 107,
"	"	"	64.
"	"	1.675	Buignet, J. 14, 15.
"	"	1.636, 15°.5	Forbes, P. M. 32,
"	"	"	135.
"	"	1.665, 15°.5	Holker, P. M. (3),
"	"	"	27, 213.
"	"	1.701, 16°	Pape, P. A. 120,
"	"	"	373.
"	"	1.684, 15°.4	Pettersson, U. N. A.
"	"	1.691, 15°.5	1876.
"	"	1.680	Schroder, Dm. 1873.
"	"	1.675	Schroder, J. P. C.
"	"	"	(2), 19, 266.
"	"	1.632	W. C. Smith, Am.
"	"	"	J. P. 53, 148.
"	"	1.678, 15°	Thorpe and Watts.
"	"	"	J. C. S. 37, 102.
Zinc sulphate	$\text{ZnSO}_4$	3.681, m. of 2	Playfair and Joule.
"	"	"	M. C. S. 2, 401.
"	"	3.400	Karsten, Schw. J.
"	"	"	65, 391.
"	"	3.400	Filhol, Ann. (3),
"	"	"	21, 415.
"	"	3.435, 16°	Pape, P. A. 120,
"	"	"	367.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Zinc sulphate	$\text{Zn S O}_4$	3.520	Schröder. J. P. C. (2), 19, 266. Thorpe and Watts. J. C. S. 37, 102.
" "	"	3.552	
" "	"	3.580	
" "	"	3.6235, 15°	
" "	$\text{Zn S O}_4 \cdot \text{H}_2 \text{O}$	3.215, 16°	Pape. P. A. 120, 369.
" "	"	3.076	Schröder. J. P. C. (2), 19, 266.
" "	"	3.259	Playfair. J. C. S. 37, 102.
" "	"	3.2845, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Zn S O}_4 \cdot 2 \text{H}_2 \text{O}$	2.958, 15°	" "
" "	$\text{Zn S O}_4 \cdot 5 \text{H}_2 \text{O}$	2.206, 15°	" "
" "	$\text{Zn S O}_4 \cdot 6 \text{H}_2 \text{O}$	2.056	Playfair. J. C. S. 37, 102.
" "	"	2.072, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Zn S O}_4 \cdot 7 \text{H}_2 \text{O}$	1.912	Hassenfratz. Ann. 28, 3.
" "	"	2.036	Mohs. See Böttger.
" "	"	1.931, m. of 4	Playfair and Joule. M. C. S. 2, 401.
" "	"	2.036	Filhol. Ann. (3), 21, 415.
" "	"	1.953	Schiff. A. C. P. 107, 64.
" "	"	1.957	Buignet. J. 14, 15.
" "	"	1.9534	Stolba. J. P. C. 97, 503.
" "	"	1.976, 15°.5	Holker. P. M. (3), 27, 213.
" "	"	1.901, 16°	Pape. P. A. 120, 374.
" "	"	2.015	Schröder. Dm. 1873.
" "	"	1.953	Schröder. J. P. C. (2), 19, 266.
" "	"	1.955	
" "	"	1.961	W. C. Smith. Am. J. P. 53, 148.
" "	"	1.974, 15°	Thorpe and Watts. J. C. S. 37, 102.
Cadmium sulphate	$\text{Cd S O}_4$	4.447	Schröder. J. P. C. (2), 19, 266.
" "	$\text{Cd S O}_4 \cdot \text{H}_2 \text{O}$	2.939	Buignet. J. 14, 15.
" "	$3 \text{ Cd S O}_4 \cdot 8 \text{H}_2 \text{O}$	3.05, 12°	Giesecke. B. D. Z.
Mercurous sulphate	$\text{Hg}_2 \text{ S O}_4$	7.560	Playfair and Joule. M. C. S. 2, 401.
Mercuric sulphate	$\text{Hg S O}_4$	6.466	" "
Calcium sulphate	$\text{Ca S O}_4$	2.9271	Karsten. Schw. J. 65, 394.
" "	"	2.955	Neumann. P. A. 23, 1.
" "	"	3.102	Filhol. Ann. (3), 21, 415.
" " Artificial cryst.	"	2.969	Manross. J. 5, 9.
" " Anhydrite	"	2.983	Schrauf. J. 15, 756.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Calcium sulphate, Anhydrite.	$\text{Ca S O}_4$	2.92, 15°	Fuchs, J. 15, 755.
" "	"	2.796	Two lots, Schroder, Dm. 1873.
" "	"	2.759	
" "	"	2.884	
" " Artificial cryst.	"	2.98	Gorgen, Ann. (6), 1, 515
" "	$2 \text{ Ca S O}_4 \cdot \text{H}_2 \text{O}$	2.557	Johnston, P. M. 2, 13, 325.
" "	$\text{Ca S O}_4 \cdot 2 \text{ H}_2 \text{O}$	2.322	Leroyer and Dumas.
" "	"	2.310	Mohs.
" "	"	2.307	Breithaupt, Schw. J. 68, 291.
" "	"	2.331	Filhol, Ann. (5), 21, 415.
" " Gypsum	"	2.317, m. of 15	Kenngott, J. 6, 844
" "	"	2.3057	Stollba, J. P. C. 97, 503.
" " Powder	"	2.2745, 19° 4	Pettersson, U. S. A. 1874
" "	"	2.3228, 18° 2	
" " Splinters	"	2.3086, 18	
" "	"	2.3223, 18°	
Strontium sulphate, Celestite.	$\text{Sr S O}_4$	3.973	Breithaupt, Dana's Min.
" " "	"	3.9593	Bendant, Dana's Min.
" " "	"	3.96	Hunt, Dana's Min.
" " "	"	3.86	Mohs.
" " "	"	3.932, 15°	Kopp.
" " "	"	3.955	Neumann, P. A. 23, 1.
" " Artificial cryst.	"	3.927	Manross, J. 5, 9.
" " "	"	3.949	Schroder, P. A. Erg. Bd. 6, 622
" " Ppt.	"	3.5883	Karsten, Schw. J. 65, 394.
" " "	"	3.770	Filhol, Ann. (3), 21, 415.
" " "	"	3.707	Schroder, P. A. 106, 226.
" " Ppt. ignited	"	3.6679	Schweitzer, Proc. Amer. Ass. 1877, 201.
" " nitrid.	"	3.6949	
" " unignited.	"	3.7383	
" " "	"	3.9502	
" " "	"	3.9514	
" " "	"	3.9702	Gorgen, Ann. (6), 1, 515
" " Artif. cryst.	"	3.9	
Barium sulphate	$\text{Ba S O}_4$	4.42	Breithaupt
" "	"	4.446	Mohs. See Bottger
" "	"	4.2003	Karsten, Schw. J. 65, 394.
" "	"	4.4695, 0°	Kopp.
" " Barite	"	4.429	Neumann, P. A. 23, 1.
" " "	"	4.4773	G. Rose, P. A. 75
" " "	"	4.4872	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Barium sulphate. Barite }	Ba S O <sub>4</sub> -----	4.4794 }	} G. Rose. P. A. 75, 409.
" " powder. }	" -----	4.4804 }	
" " Precip. -----	" -----	4.5271 }	
" " " -----	" -----	4.5253 }	
" " Artif. cryst. "	" -----	4.179 -----	Manross. J. 5, 9.
" " -----	" -----	4.022 }	} Precipitates in dif- ferent conditions. Schröder. P. A. 106, 226.
" " -----	" -----	4.065 }	
" " -----	" -----	4.512 }	
" " Ppt. ignited. "	" -----	4.2942 }	} Schweitzer. Univer- sity of Missouri. Special pub., 1876.
" " Ppt. dried at 95°.	" -----	4.2688 }	
" " Ppt. -----	" -----	4.4591 }	
" " " -----	" -----	4.4881 }	
" " " -----	" -----	4.3958 }	} E. Wiedemann. P. M. (5), 15, 371.
" " " -----	" -----	4.3969 }	
" " " -----	" -----	4.3962 }	
" " " -----	" -----	4.3967 }	
" " Artif. cryst. "	" -----	4.44—4.50 -----	Gorgeu. Ann. (6), 4, 515.
Lead sulphate. -----	Pb S O <sub>4</sub> -----	6.298 -----	Mohs.
" " -----	" -----	6.1691 -----	Karsten. Schw. J. 65, 394.
" " -----	" -----	6.30 -----	Filhol. Ann. (3), 21, 415.
" " -----	" -----	6.35 -----	Smith. J. 8, 969.
" " -----	" -----	6.20 -----	Field. J. 14, 1022.
" " Native -----	" -----	6.329 -----	} Schröder. P. A. Er- ganz. Bd. 6, 622.
" " Precip. -----	" -----	6.212 -----	
" " -----	" -----	5.96, 17° 1' -----	
" " -----	" -----	5.97, 16° 8' -----	Pettersson. U. N. A. 1874.
" " Artif. cryst. "	" -----	6.16 -----	Gorgeu. Ann. (6), 4, 515.
Manganese sulphate. -----	Mn S O <sub>4</sub> -----	3.1, 14° -----	Bödeker. B. D. Z.
" " -----	" -----	3.192, 16° -----	Pape. P. A. 120, 368.
" " -----	" -----	2.954 -----	Schröder. Dm. 1873.
" " -----	" -----	2.975 -----	Schröder. J. P. C. (2), 19, 266.
" " -----	" -----	3.235, 14° 6' -----	} Pettersson. U. N. A. 1876.
" " -----	" -----	3.260, 14° -----	
" " -----	" -----	3.386 -----	Playfair. J. C. S. 37, 102.
" " -----	" -----	3.282, 15° -----	Thorpe and Watts. J. C. S. 37, 102.
" " -----	Mn S O <sub>4</sub> . H <sub>2</sub> O -----	2.870, 14° 2' -----	} Pettersson. U. N. A. 1876.
" " -----	" -----	2.903, 15° 4' -----	
" " -----	" -----	2.905, 14° 9' -----	
" " -----	" -----	3.210 -----	Playfair. J. C. S. 37, 102.
" " -----	" -----	2.845, 15° -----	Thorpe and Watts. J. C. S. 37, 102.
" " Szmikite -----	" -----	3.15 -----	Schröckinger. J. 30, 1296.
" " -----	Mn S O <sub>4</sub> . 2 H <sub>2</sub> O -----	2.526, 15° -----	Thorpe and Watts. J. C. S. 37, 102.
" " -----	Mn S O <sub>4</sub> . 3 H <sub>2</sub> O -----	2.356, 15° -----	" "
" " -----	Mn S O <sub>4</sub> . 4 H <sub>2</sub> O -----	2.261 -----	Topsoë. C. C. 4, 76

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Manganese sulphate	$\text{Mn SO}_4 \cdot 5 \text{H}_2\text{O}$	1.834	Gmelin.
" "	"	2.087	Kopp. A. C. P.
" "	"	2.095	36, 1.
" "	"	2.059, 16°	Pape. P. A. 120, 372.
" "	"	2.099, 16° 2	Pettersson. U. N. A. 1876.
" "	"	2.103, 17° 6	
" "	"	2.107, 15° 2	
" "	"	2.103, 15°	
Ferrous sulphate	$\text{Fe SO}_4$	2.841	Thorpe and Watts. J. C. S. 37, 102.
	"	3.138	Filhol. Ann. (3), 21, 115.
	"	3.138	Playfair and Joule. M. C. S. 2, 401.
	"	3.48	Playfair. J. C. S. 37, 102.
	"	3.346, 15°	Thorpe and Watts. J. C. S. 37, 102.
	$\text{Fe SO}_4 \cdot \text{H}_2\text{O}$	3.017	Playfair. J. C. S. 37, 102.
	"	2.994, 15°	Thorpe and Watts. J. C. S. 37, 102.
	$\text{Fe SO}_4 \cdot 2 \text{H}_2\text{O}$	2.773, 15°	" "
	$\text{Fe SO}_4 \cdot 3 \text{H}_2\text{O}$	2.268, 16°	Pape. P. A. 120, 371.
	$\text{Fe SO}_4 \cdot 4 \text{H}_2\text{O}$	2.227, 15°	Thorpe and Watts. J. C. S. 37, 102.
	$\text{Fe SO}_4 \cdot 7 \text{H}_2\text{O}$	1.8399	Hassensfratz. Ann. 28, 3.
	"	1.857, m. of 3	Playfair and Joule. M. C. S. 2, 401.
	"	1.8889, 4°	Playfair and Joule. J. C. S. 1, 138.
	"	1.904	Filhol. Ann. (3), 21, 115.
	"	1.884	Schiff. A. C. P. 107, 64.
	"	1.902	Buignet. J. 14, 15.
	"	1.851, 15° 5	Holker. P. M. (3), 27, 214.
	"	1.9854, 16°	Pape. P. A. 120, 372.
	"	1.881	Schroder. Dm. 1873.
	"	1.897	Schroder. J. P. C. (2), 19, 266.
	"	1.896	W. C. Smith. Am. J. P. 53, 145.
Ferric sulphate	$\text{Fe}_2 (\text{SO}_4)_3$	3.097, 18°	Pettersson. U. N. A. 1874.
" "	"	3.098, 18° 5	
" "	"	3.103, 18° 2	
Coquimbite	$\text{Fe}_2 (\text{SO}_4)_3 \cdot 9 \text{H}_2\text{O}$	2.0—2.1	Dana's Mineralogy.
"	"	2.092	Breithaupt. See Z. K. M. 3, 520.
Hileite	$\text{Fe}_2 (\text{SO}_4)_3 \cdot 12 \text{H}_2\text{O}$	1.812	Schrauf. N. J. 1877, 252.
Nickel sulphate	$\text{Ni SO}_4$	3.643, 16°	Pape. P. A. 120, 369.
" "	"	3.652	Schroder. J. P. C. (2), 19, 266.
" "	"	3.696	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Nickel sulphate	$\text{Ni S O}_4$	3.526	Playfair. J. C. S. 37, 102.
" "	"	3.418, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Ni S O}_4 \cdot 6 \text{ H}_2 \text{ O}$	2.042	} Topsoë. C. C. 4, 76.
" "	"	2.074	
" "	"	2.031, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Ni S O}_4 \cdot 7 \text{ H}_2 \text{ O}$	2.037	Kopp. A. C. P. 36, 1.
" "	"	1.931	
" "	Morenosite	"	Schiff. A. C. P. 107, 64.
" "	"	2.004	Fulda. J. 17, 859.
" "	"	1.877, 16°	Pape. P. A. 120, 373.
" "	"	1.955, 14°	Petterson. U. N. A. 1876.
" "	"	1.949, 15°	Thorpe and Watts. J. C. S. 37, 102.
Cobalt sulphate	$\text{Co S O}_4$	3.531	Playfair and Joule. M. C. S. 2, 401.
" "	"	3.614, 15°.	} Petterson. U. N. A. 1876.
" "	"	3.615, 16°	
" "	"	3.444	Playfair. J. C. S. 37, 102.
" "	"	3.472, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Co S O}_4 \cdot \text{H}_2 \text{ O}$	3.125, 15°	" "
" "	$\text{Co S O}_4 \cdot 2 \text{ H}_2 \text{ O}$	2.712	Playfair. J. C. S. 37, 102.
" "	"	2.668, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Co S O}_4 \cdot 4 \text{ H}_2 \text{ O}$	2.327, 15°	" "
" "	$\text{Co S O}_4 \cdot 5 \text{ H}_2 \text{ O}$	2.134, 15°	" "
" "	$\text{Co S O}_4 \cdot 6 \text{ H}_2 \text{ O}$	2.019, 15°	" "
" "	$\text{Co S O}_4 \cdot 7 \text{ H}_2 \text{ O}$	1.924	Schiff. A. C. P. 107, 64.
" "	"	1.958, 15°.	} Petterson. U. N. A. 1876.
" "	"	1.964, 15°.	
" "	"	1.958	Schröder. J. P. C. (2), 19, 266.
" "	"	1.918, 15°	Thorpe and Watts. J. C. S. 37, 102.
Copper sulphate	$\text{Cu S O}_4$	3.631	Playfair and Joule. M. C. S. 2, 401.
" "	"	3.572	Karsten. Schw. J. 65, 394.
" "	"	3.530	Filhol. Ann. (3), 21, 415.
" "	"	3.527, 16°	Pape. P. A. 120, 368.
" "	"	3.707, 19°	Favre and Valson. C. R. 77, 579.
" "	"	3.82, 17°.	} Petterson. U. N. A. 1874.
" "	"	3.83, 18°	
" "	"	3.651, 11°	Hampe. Z. C. 13, 367.
" "	"	3.83	Schröder. J. P. C. (2), 19, 266.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Copper sulphate	$\text{Cu SO}_4$	3.606, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Cu SO}_4 \cdot \text{H}_2\text{O}$	3.125, 16°	Pape, P. A. 120, 370.
" "	"	3.235, 17°·2	Petersson, U. N. A. 1874.
" "	"	3.239, 18°·1	
" "	"	3.246, 18°	
" "	"	3.068	Schroder, J. P. C. (2), 19, 266.
" "	"	3.206	Playfair, J. C. S. 37, 102.
" "	"	3.289, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Cu SO}_4 \cdot 2\text{H}_2\text{O}$	2.808, 16°	Pape, P. A. 120, 371.
" "	"	2.878	Playfair, J. C. S.
" "	"	2.891	37, 102.
" "	"	2.953, 15°	Thorpe and Watts. J. C. S. 37, 102.
" "	$\text{Cu SO}_4 \cdot 3\text{H}_2\text{O}$	2.663, 15°	" "
" "	$2\text{Cu SO}_4 \cdot 7\text{H}_2\text{O}$	2.618, 15°	" "
" "	$\text{Cu SO}_4 \cdot 5\text{H}_2\text{O}$	2.1943	Hassensfratz, Ann. 28, 3.
" "	"	2.2	Gmelin.
" "	Native	2.297	Breithaupt, J. P. C. 11, 151.
" "	"	2.271	Kopp, A. C. P. 36, 1.
" "	"	2.251	Playfair and Joule. M. C. S. 2, 401.
" "	"	2.289	Filhol, Ann. (3), 21, 415.
" "	"	2.2422	Playfair and Joule. J. C. S. 1, 138.
" "	"	2.2781	
" "	"	2.2601	
" "	"	2.302	Buignet, J. 11, 15.
" "	"	2.2778	Stollen, J. P. C. 97, 503.
" "	"	2.268, 16°	Pape, P. A. 120, 371.
" "	"	2.248, 18°·9	Favre and Valson. C. R. 77, 579.
" "	"	2.286, 19°·4	Petersson, U. N. A. 1874.
" "	"	2.262, 20°	
" "	"	2.277	Schroder, Dm. 1873.
" "	"	2.263	Schroder, J. P. C. (2), 19, 266.
" "	"	2.266	Rudolf, Ber. 12, 251.
" "	"	2.330	
" "	"	2.242	W. C. Smith, Am. J. P. 53, 145.
" "	"	2.284, 15°	Thorpe and Watts. J. C. S. 37, 102.
Chromic sulphate	$\text{Cr}_2 (\text{SO}_4)_3$	2.743, 17°·2	Favre and Valson. C. R. 77, 579.
" "	"	3.012	Nilson and Petersson. C. R. 91, 232.
" "	$\text{Cr}_2 (\text{SO}_4)_3 \cdot 15\text{H}_2\text{O}$	1.696, 22°	Schrotter, P. A. 53, 513.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chromic sulphate	$\text{Cr}_2 (\text{S O}_4)_3 \cdot 15 \text{H}_2 \text{O}$	1.867, 17°.2	Favre and Valson. C. R. 77, 579.
Aluminum sulphate	$\text{Al}_2 (\text{S O}_4)_3$	2.7400	Karsten. Schw. J. 65, 394.
"	"	2.171	Playfair and Joule. M. C. S. 2, 401.
"	"	2.672, 22°.5	Favre and Valson. C. R. 77, 579.
"	"	2.710	Pettersson. U. N. A. 1874.
"	"	2.716	
"	$\text{Al}_2 (\text{S O}_4)_3 \cdot 18 \text{H}_2 \text{O}$	1.671, m. of 2	Playfair and Joule. M. C. S. 2, 401.
"	"	1.569	Filhol. Ann. (3), 21, 415.
"	"	1.767, 22°.1	Favre and Valson. C. R. 77, 579.
Indium sulphate	$\text{In}_2 (\text{S O}_4)_3$	3.438	Nilson and Petters- son. C. R. 91, 232.
Scandium sulphate	$\text{Sc}_2 (\text{S O}_4)_3$	2.579	" "
Yttrium sulphate	$\text{Y}_2 (\text{S O}_4)_3$	2.606, 19°.4	Pettersson. U. N. A. 1876.
"	"	2.615, 15°	
"	"	2.626, 19°.3	
"	"	2.612	
"	$\text{Y}_2 (\text{S O}_4)_3 \cdot 8 \text{H}_2 \text{O}$	2.52	Nilson and Petters- son. C. R. 91, 232.
"	"	2.53	Cleveland Hoeglund. B. S. C. 18, 200.
"	"	"	Topsoë. Quoted by Pettersson.
"	"	2.531, 19°.6	Pettersson. U. N. A. 1876.
"	"	2.537, 19°.4	
"	"	2.552, 15°	
"	"	2.540	
Erbium sulphate	$\text{Er}_2 (\text{S O}_4)_3$	3.518, 14°.5	Nilson and Petters- son. C. R. 91, 232.
"	"	3.524, 14°.2	
"	"	3.678	
"	$\text{Er}_2 (\text{S O}_4)_3 \cdot 8 \text{H}_2 \text{O}$	3.17	Pettersson. U. N. A. 1876.
"	"	"	Nilson and Petters- son. C. R. 91, 232.
"	"	3.230, 16°.4	Cleveland Hoeglund. B. S. C. 18, 200.
"	"	3.242, 16°.6	
"	"	3.248, 17°.1	
"	"	3.180	
Ytterbium sulphate	$\text{Yb}_2 (\text{S O}_4)_3$	3.793	Pettersson. U. N. A. 1876.
"	$\text{Yb}_2 (\text{S O}_4)_3 \cdot 8 \text{H}_2 \text{O}$	3.286	Nilson and Petters- son. C. R. 91, 232.
Lanthanum sulphate	$\text{La}_2 (\text{S O}_4)_3$	3.53, 13°.6	Pettersson. U. N. A. 1876.
"	"	3.67, 15°.4	
"	"	3.600	
"	"	3.544	
"	"	3.545	Brauner. S. W. A. June, 1882.
"	$\text{La}_2 (\text{S O}_4)_3 \cdot 9 \text{H}_2 \text{O}$	2.827	
"	"	"	Topsoë. Quoted by Pettersson.
"	"	2.848, 17°.2	Pettersson. U. N. A. 1876.
"	"	2.864, 17°.4	
"	"	2.853	
			Nilson and Petters- son. C. R. 91, 232.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cerium sulphate	$\text{Ce}_2(\text{SO}_4)_3$	3.916, 12 <sup>o</sup> .5	Pettersson, U. N. A. 1876.
" "	"	3.912	Nilson and Pettersson, C. R. 91, 232.
" "	$\text{Ce}_2(\text{SO}_4)_3 \cdot 5 \text{H}_2\text{O}$	3.214, 11 <sup>o</sup> .2	Pettersson, U. N. A. 1876.
" "	"	3.232, 14 <sup>o</sup>	"
" "	"	3.220	Nilson and Pettersson, C. R. 91, 232.
Didymium sulphate	$\text{Di}_2(\text{SO}_4)_3$	3.722, 14 <sup>o</sup> .6	Pettersson, U. N. A. 1876.
" "	"	3.756, 15 <sup>o</sup> .6	"
" "	"	3.735	Nilson and Pettersson, C. R. 91, 232.
" "	"	3.662	Cleve, U. N. A. 1885.
" "	"	3.672	"
" "	$\text{Di}_2(\text{SO}_4)_3 \cdot 8 \text{H}_2\text{O}$	2.82	Cleveland Hoeglund, B. S. C. 18, 200.
" "	"	2.877, 16 <sup>o</sup> .4	Pettersson, U. N. A. 1876.
" "	"	2.886, 14 <sup>o</sup> .8	"
" "	"	2.878	Nilson and Pettersson, C. R. 91, 262.
" "	"	2.827, 14 <sup>o</sup> .8	"
" "	"	2.828, 16 <sup>o</sup> .2	Cleve, U. N. A. 1885.
" "	"	2.831, 16 <sup>o</sup>	"
Samarium sulphate	$\text{Sm}_2(\text{SO}_4)_3$	3.898, 18 <sup>o</sup> .3	" "
" "	$\text{Sm}_2(\text{SO}_4)_3 \cdot 8 \text{H}_2\text{O}$	2.928	" "
" "	"	2.962	"
Thorium sulphate	$\text{Th}(\text{SO}_4)_2$	4.053, 22 <sup>o</sup> .8	Clarke, A. C. J. 2, 175.
" "	"	4.2252, 17 <sup>o</sup>	Kruss and Nilson, Ber. 20, 1675.
" "	$2 \text{Th}(\text{SO}_4)_2 \cdot 9 \text{H}_2\text{O}$	3.398, 24 <sup>o</sup>	Clarke, A. C. J. 2, 175.
" "	$\text{Th}(\text{SO}_4)_2 \cdot 9 \text{H}_2\text{O}$	2.767	Topsoe, B. S. C. 21, 120.
Uranyl sulphate	$\text{UO}_2 \cdot \text{SO}_4 \cdot 3 \text{H}_2\text{O}$	3.280, 16 <sup>o</sup> .5	H. Schmidt, F. W. C.

## 2d. Double and Triple Sulphates.\*

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium hydrogen sulphate	$\text{NaHSO}_4$	2.742	Playfair and Joule, M. C. S. 2, 401.
Potassium hydrogen sulphate.	$\text{KHSO}_4$	2.112	Thomson, Ann. Phil. (2), 10, 435.
" "	"	2.163	Jacquelin, A. C. P. 32, 234.
" "	"	2.175, m. of 2	Playfair and Joule, M. C. S. 2, 401.
" "	"	2.17767, 4	Playfair and Joule, J. C. S. 1, 138.

\* Exclusive of basic or partly basic double sulphates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium hydrogen sulphate.	$K H S O_4$	2.305, cryst.	} Schröder. Dm. 1873.
" " "	"	2.354 } cryst.	
" " "	"	2.355 } mass.	
" " "	"	2.091, after fusion.	
" " "	"	2.245, cryst.	Wyrouboff. B. S. M. 7, 7.
Ammonium hydrogen sulphate.	$Am H S O_4$	1.761, m. of 2	Playfair and Joule. M. C. S. 2, 401.
" " "	"	1.787	Schiff. A. C. P. 107, 64.
Sodium potassium sulphate.	$Na_2 S O_4, 3 K_2 S O_4$	2.668	} Two lots. Penny. J. 8, 333.
" " "	"	2.671	
Lithium ammonium sulphate.	$Am Li S O_4$	1.164 } two mod	} Wyrouboff. B. S. M. 5, 42.
" " "	"	1.204 } ifications	
Sodium ammonium sulphate.	$Am Na S O_4, 2 H_2 O$	1.63	Schiff. A. C. P. 114, 68.
Potassium ammonium sulphate.	$Am K S O_4$	2.280	Schiff. A. C. P. 107, 64.
Guanovulite	$Am_2 K_7 H_3 (S O_4)_6, 4 H_2 O$	2.33 }	} Wibel. Ber. 7, 393.
"	"	2.65 }	
Glauberite	$Na_2 Ca (S O_4)_2$	2.767	Breithaupt. Schw. J. 68, 291.
"	"	2.64	Ulex. J. 2, 776.
Syngenite	$K_2 Ca (S O_4)_2, H_2 O$	2.603, 17° 5	Zepharovich. J. 25, 1143.
"	"	2.252	Rumpf. Dana's Min., 2d Supp.
Dreelite	$Ca S O_4, 3 Ba S O_4$	3.2—3.4	Dana's Mineralogy.
Polyhalite	$K_2 Ca_2 Mg (S O_4)_4, 2 H_2 O$	2.7689	" "
Krugite	$K_2 Ca_4 Mg (S O_4)_6, 2 H_2 O$	2.801	Precht. Ber. 14, 2138.
Simonyite	$Na_2 Mg(SO_4)_2, 4 H_2 O$	2.244	Tschermak. J. 22, 1241.
Loewite	$Na_4 Mg_2(SO_4)_4, 5 H_2 O$	2.376	Haidinger. J. 1, 1220.
Krönnkite	$Na_2 Cu(SO_4)_2, 2 H_2 O$	2.5	Donceyko. Dana's Min., 3d Supp.
Potassium magnesium sulphate.	$K_2 Mg (S O_4)_2$	2.676	Playfair and Joule. M. C. S. 2, 401.
" " "	"	2.735	} Schröder. Ber. 7, 1117.
" " "	"	2.750	
" " "	$K_2 Mg(SO_4)_2, 6 H_2 O$	2.076, m. of 2	Playfair and Joule. M. C. S. 2, 401.
" " "	"	2.05319, 4°	Playfair and Joule. J. C. S. 1, 138.
" " "	"	1.995	Schiff. A. C. P. 107, 64.
" " "	"	2.024	Topsoe and Christensen.
" " "	"	2.034	Schröder. Dm. 1873.
" " "	"	2.036	} Schröder. J. P. C. (2), 19, 266.
" " "	"	2.048	
Ammonium magnesium sulphate.	$Am_2 Mg (S O_4)_2$	2.080	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ammonium magnesium sulphate.	$\text{Am}_2\text{Mg}(\text{SO}_4)_2$	2.095	Schroder, J. P. C.
"	"	2.141	(2), 19, 266.
"	$\text{Am}_2\text{Mg}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	1.696	Gmelin.
"	"	1.721	Playfair and Joule.
"	"	1.71686, 1°	M. C. S. 2, 401.
"	"	1.680	Playfair and Joule.
"	"	1.762	J. C. S. 1, 138.
"	"	1.720	Schiff, A. C. P. 107, 64.
"	"	1.762	Buignet, J. 14, 15.
"	"	1.720	Topsoc and Christensen.
"	"	1.723	Schroder, J. P. C.
"	"	1.727	(2), 19, 266.
Potassium zinc sulphate.	$\text{K}_2\text{Zn}(\text{SO}_4)_2$	2.816	Playfair and Joule.
"	"	2.946	M. C. S. 2, 401.
"	"	2.891	Various lots, differently treated.
"	"	3.027	
"	"	2.703	
"	"	2.733	
"	$\text{K}_2\text{Zn}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	2.153	Schroder, J. P. C.
"	"	2.215	(2), 19, 266.
"	"	2.24034, 1°	Kepp, A. C. P. 36, 1.
"	"	2.2153	Playfair and Joule.
"	"	2.24034, 1°	M. C. S. 2, 401.
"	"	2.153	Playfair and Joule.
"	"	2.240	J. C. S. 1, 138.
"	"	2.249	Schiff, A. C. P. 107, 64.
"	"	2.240	Schroder, Dm. 1873.
"	"	2.235	Schroder, J. P. C.
"	"	2.240	(2), 19, 266.
Ammonium zinc sulphate	$\text{Am}_2\text{Zn}(\text{SO}_4)_2$	2.222	Playfair and Joule.
"	"	2.258	M. C. S. 2, 401.
"	"	2.288	Schroder, J. P. C.
"	$\text{Am}_2\text{Zn}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	1.897, m. of 2	(2), 19, 266.
"	"	1.910	Playfair and Joule.
"	"	1.919	M. C. S. 2, 401.
"	"	1.921	Schiff, A. C. P. 107, 64.
"	"	1.925	Schroder, J. P. C.
Potassium cadmium sulphate.	$\text{K}_2\text{Cd}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	2.438	(2), 19, 266.
Ammonium cadmium sulphate.	$\text{Am}_2\text{Cd}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	2.073	Schiff, A. C. P. 107, 64.
Potassium manganese sulphate.	$\text{K}_2\text{Mn}(\text{SO}_4)_2$	3.008, m. of 2	"
"	"	3.031	Playfair and Joule.
"	"	2.954	M. C. S. 2, 401.
"	"	2.313	Schroder, Ber. 7, 1118.
"	$\text{K}_2\text{Mn}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$	1.930	Schroder, J. P. C.
Ammonium manganese sulphate.	$\text{Am}_2\text{Mn}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	1.823	(2), 19, 266.
"	"	1.827	Thomson, Gm. H. 1, 71.
"	"	3.042	Schroder, J. P. C.
Potassium iron sulphate.	$\text{K}_2\text{Fe}(\text{SO}_4)_2$	3.042	(2), 19, 266.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium iron sulphate.	$K_2 Fe (SO_4)_2 \cdot 6 H_2 O$	2.202 -----	Playfair and Joule. M. C. S. 2, 401.
“ “ “	“	2.189 -----	Schiff. A. C. P. 107, 64.
Ammonium iron sulphate	$Am_2 Fe (SO_4)_2 \cdot 6 H_2 O$	1.848, m. of 2	Playfair and Joule. M. C. S. 2, 401.
“ “ “	“	1.813 -----	Schiff. A. C. P. 107, 64.
“ “ “	“	1.886 -----	Schröder. J. P. C. (2), 19, 266.
Potassium nickel sulphate	$K_2 Ni (SO_4)_2$	2.897, m. of 2	Playfair and Joule. M. C. S. 2, 401.
“ “ “	“	3.086 -----	Schröder. Ber. 7, 1117.
“ “ “	$K_2 Ni (SO_4)_2 \cdot 6 H_2 O$	2.111 -----	Kopp. A. C. P. 36, 1. Schröder. J. P. C. (2), 19, 266.
“ “ “	“	2.136 -----	
“ “ “	“	1.921 -----	
“ “ “	“	1.922 -----	
Ammonium nickel sulphate.	$Am_2 Ni (SO_4)_2 \cdot 6 H_2 O$	1.783 -----	Kopp. A. C. P. 36, 1.
“ “ “	“	1.915 -----	
“ “ “	“	1.921 -----	
Potassium cobalt sulphate	$K_2 Co (SO_4)_2$	3.105 -----	Schröder. Ber. 7, 1118.
“ “ “	$K_2 Co (SO_4)_2 \cdot 6 H_2 O$	2.154 -----	Schiff. A. C. P. 107, 64.
“ “ “	“	2.205, 16°.8	Pettersson. U. N. A. 1876.
“ “ “	“	2.214, 16°.6	
Ammonium cobalt sulphate.	$Am_2 Co (SO_4)_2 \cdot 6 H_2 O$	1.873 -----	Schiff. A. C. P. 107, 64.
“ “ “	“	1.902, 18°	Pettersson. U. N. A. 1876.
“ “ “	“	1.907, 16°.6	
“ “ “	“	1.893 -----	Schröder. J. P. C. (2), 19, 266.
Thallium cobalt sulphate.	$Tl_2 Co (SO_4)_2 \cdot 6 H_2 O$	3.729, 16°.2	Pettersson. U. N. A. 1876.
“ “ “	“	3.769, 16°	
“ “ “	“	3.803, 16°.4	
Potassium coppersulphate.	$K_2 Cu (SO_4)_2$	2.797, m. of 2	Playfair and Joule. M. C. S. 2, 401.
“ “ “	“	2.784, 20°.5	Favre and Valson. C. R. 77, 579.
“ “ “	“	2.754 -----	Schröder. Dm. 1873.
“ “ “	“	2.779 -----	
“ “ “	“	2.789 -----	
“ “ “	$K_2 Cu (SO_4)_2 \cdot 6 H_2 O$	2.244, m. of 2	Playfair and Joule. M. C. S. 2, 401.
“ “ “	“	2.16376, 4°	Playfair and Joule. J. C. S. 1, 138.
“ “ “	“	2.137 -----	Schiff. A. C. P. 107, 64.
“ “ “	“	2.186, 18°.8	Favre and Valson. C. R. 77, 579.
“ “ “	“	2.224 -----	Schröder. Dm. 1870.
“ “ “	“	2.221, 16°	Pettersson. U. N. A. 1876.
Ammonium copper sulphate.	$Am_2 Cu (SO_4)_2$	2.197, m. of 2	Playfair and Joule. M. C. S. 2, 401.
“ “ “	“	2.348 -----	Schröder. J. P. C. (2), 19, 266.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ammonium copper sulphate.	$\text{Am}_2\text{Cu}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	1.756 -----	Kepp. A. C. P. 36, 1.
" " "	"	1.757 -----	"
" " "	"	1.891, m. of 2	Playfair and Joule. M. C. S. 2, 401.
" " "	"	1.89378, 4°	Playfair and Joule. J. C. S. 1, 138.
" " "	"	1.931 -----	Schiff. A. C. P. 107, 64.
" " "	"	1.925, 15° 2	Pettersson. U. N. A. 1876.
" " "	"	1.931, 15° 8	"
" " "	"	1.870, 22°	Evans. F. W. C.
Magnesium zinc sulphate	$\text{MgZn}(\text{SO}_4)_2 \cdot 14\text{H}_2\text{O}$	1.817 -----	Schiff. A. C. P. 107, 64.
Magnesium cadmium sulphate.	$\text{MgCd}(\text{SO}_4)_2 \cdot 14\text{H}_2\text{O}$	1.983 -----	" "
Magnesium iron sulphate	$\text{MgFe}(\text{SO}_4)_2 \cdot 14\text{H}_2\text{O}$	1.793 -----	" "
Magnesium copper sulphate.	$\text{MgCu}(\text{SO}_4)_2 \cdot 14\text{H}_2\text{O}$	1.813 -----	" "
Fausonite -----	$\text{MgMn}_2(\text{SO}_4)_3 \cdot 15\text{H}_2\text{O}$	1.88 -----	Breithaupt. J. 18, 901.
Zinc iron manganese sulphate. Native.	$\text{Zn Fe Mn}_3 (\text{SO}_4)_7 \cdot 28\text{H}_2\text{O}$	2.1627 -----	Hes. A. C. J. 3, 420.
Mendozite -----	$\text{NaAl}(\text{SO}_4)_2 \cdot 11\text{H}_2\text{O}$	1.88 -----	Thomson. Dana's Min.
Sodium aluminum alum.	$\text{NaAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.641 -----	Schiff. A. C. P. 107, 64.
" " "	"	1.597 -----	Buignet. J. 14, 15.
" " "	"	1.686, 18°	"
" " "	"	1.693, 18°	Pettersson. U. N. A. 1874.
" " "	"	1.694, 18° 2	"
" " "	"	1.73 -----	Soret. J. C. S. 50, 596.
Potassium aluminum alum.*	$\text{KAl}(\text{SO}_4)_2$	2.228, m. of 2	Playfair and Joule. M. C. S. 2, 401.
" " "	"	2.6846 } 15°	Pettersson. U. N. A. 1876.
" " "	"	2.6905 }	"
" " "	$\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.7109 -----	Hassenfratz. Ann. 28, 3.
" " "	"	1.753 -----	Duffrenoy.
" " "	"	1.721 -----	Kepp. A. C. P. 36, 1.
" " "	"	1.726, m. of 4	Playfair and Joule. M. C. S. 2, 401.
" " "	"	1.75125, 4°	Playfair and Joule. J. C. S. 1, 138.
" " "	"	1.711 -----	Schroder. Dm. 1873.
" " "	"	1.749, 21°	"
" " "	"	1.753, 21°	Pettersson. U. N. A. 1874.
" " "	"	1.755, 20° 5	"
" " "	"	1.753 -----	W. C. Smith. Am. J. P. 53, 145.
" " "	"	1.722 -----	Schiff. A. C. P. 107, 64.
" " "	"	1.757 -----	Buignet. J. 14, 15.
" " "	"	1.7505 -----	Stolba. J. P. C. 97, 503.

\* The dehydrated alums are included here for convenience.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium aluminum alum	$K Al(SO_4)_2 \cdot 12 H_2O$	1.7546, 0°	Spring. Ber. 15, 1254, and Bei. 6, 648. Also a series in Ber. 17, 408.
"	"	1.7542, 10°	
"	"	1.7538, 20°	
"	"	1.7532, 30°	
"	"	1.7526, 40°	
"	"	1.7521, 50°	
"	"	1.7501, 60°	
"	"	1.7474, 70°	
"	"	1.7252, 80°	
"	"	1.7067, 90°	
"	"	1.758, 21°, not pressed.	Spring. Ber. 16, 2724.
"	"	1.756, 16°.5, once pressed.	
"	"	1.750, 16°.5, twice pressed	
"	"	1.735	Soret. C. R. 99, 867.
Rubidium aluminum alum	$Rb Al(SO_4)_2$	2.7832, 14°.8	Petterson. U. N. A. 1876.
"	"	2.7910, 15°	Redtenbacher. S. W. A. 51, 248.
"	$Rb Al(SO_4)_2 \cdot 12 H_2O$	1.874	
"	"	1.890	Petterson. U. N. A. 1874.
"	"	1.891	
"	"	1.8667, 0°	Spring. Ber. 15, 1254, and Bei. 6, 648. Also a series in Ber. 17, 408.
"	"	1.8648, 10°	
"	"	1.8639, 20°	
"	"	1.8635, 30°	
"	"	1.8631, 40°	
"	"	1.8624, 50°	
"	"	1.8619, 60°	
"	"	1.8611, 70°	
"	"	1.8596, 80°	
"	"	1.8578, 90°	
"	"	1.8554, 100°	Setterberg. Ber. 15, 1740.
"	"	1.883	
"	"	1.886	Soret. C. R. 99, 867.
"	"	1.852	
Cæsium aluminum alum	$Cs Al(SO_4)_2 \cdot 12 H_2O$	2.003	Redtenbacher. S. W. A. 51, 248.
"	"	1.994, 18°.1	Petterson. U. N. A. 1874.
"	"	2.000, 20°	
"	"	2.0215, 0°	Spring. Ber. 15, 1254, and Bei. 6, 648. Also a series in Ber. 17, 408.
"	"	2.0210, 10°	
"	"	2.0205, 20°	
"	"	2.0200, 30°	
"	"	3.0194, 40°	
"	"	2.0189, 50°	
"	"	2.0186, 60°	
"	"	2.0173, 70°	
"	"	2.0153, 80°	
"	"	2.0107, 90°	
"	"	2.0061, 100°	Spring. Ber. 16, 2724.
"	"	1.988, 18°, not pressed.	
"	"	2.000, 20°, once pressed.	
"	"	2.005, 20°, twice pressed	

NAME.	FORMULA.	SPE. GRAVITY.	AUTHORITY
Cesium aluminum alum	$\text{Cs Al(SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.911	Soret, C. R. 99, 867.
Ammonium aluminum alum.	$\text{Am Al(SO}_4)_2$	2.039	Playfair and Joule, M. C. S. 2, 401.
"	$\text{Am Al(SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.602	Breithaupt, J. P. C. 11, 151.
"	"	1.625	Kapp, A. C. P. 36, 1.
"	"	1.626	
"	"	1.625	Playfair and Joule, M. C. S. 2, 401.
"	"	1.621	Schiff, A. C. P. 107, 61.
"	"	1.653	Buignet, J. 14, 15.
"	"	1.612, m. of 1	Petterson, U. N. A. 1874.
"	"	1.638 extremes	
"	"	1.647, 18-21.5	
"	"	1.661	W. C. Smith, Am. J. P. 53, 147.
"	"	1.6357, 0°	Spring, Ber. 15, 1251, and Ber. 6, 648. Also a series in Ber. 17, 408.
"	"	1.6351, 10°	
"	"	1.6346, 20°	
"	"	1.6315, 30°	
"	"	1.6310, 40°	
"	"	1.6306, 50°	
"	"	1.6332, 60°	
"	"	1.6328, 70°	
"	"	1.6323, 80°	
"	"	1.6299, 90°	
"	"	1.6275, 100°	
"	"	1.641, 18°, not pressed.	Spring, Ber. 16, 2724.
"	"	1.629, 16° 5, once pressed.	
"	"	1.634, 18°, twice pressed	
"	"	1.631	Soret, C. R. 99, 867.
Methylamine aluminum alum.	$\text{N H}_2\text{CH}_2\text{Al(SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.568	" "
Thallium aluminum alum	$\text{Tl Al(SO}_4)_2 \cdot 2\text{H}_2\text{O}$	3.645, 17°	Petterson, U. N. A. 1874.
"	"	2.318, 15° 8	Spring, Ber. 16, 2724.
"	"	2.366, 21°	
"	"	2.368, 20° 6	
"	"	2.384, 17°	
"	"	2.320, 22°, not pressed.	
"	"	2.314, 16° 5, once pressed.	
"	"	2.314, 18°, twice pressed	
"	"	2.3226, 0°	
"	"	2.3213, 40°	
"	"	2.3200, 20°	
"	"	2.3189, 30°	
"	"	2.3184, 40°	
"	"	2.3181, 50°	Spring, Ber. 17, 408.
"	"	2.257	
Potassium chrome alum	$\text{K Cr(SO}_4)_2$	2.183, 14.1	Soret, C. R. 99, 867.
"	"	2.1618, 14.1	Petterson, U. N. A. 1876.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium chrome alum	$K Cr (SO_4)_2 \cdot 12 H_2O$	1.848 -----	Kopp. A. C. P. 36, 1.
" " "	"	1.826 -----	Playfair and Joule. M. C. S. 2, 401.
" " "	"	1.85609, 4°	Playfair and Joule. J. C. S. 1, 138.
" " "	"	1.845, 12°	Schiff. A. C. P. 107, 64.
" " "	"	1.839, 21°	Pettersson. U. N. A. 1874.
" " "	"	1.840, 21°	
" " "	"	1.841, 20°.2	
" " "	"	1.849, 21°	
" " "	"	1.807 }	Schröder. Dm. 1873.
" " "	"	1.808 }	
" " "	"	1.8278, 0°	Spring. Ber. 15, 1254, and Bei. 6, 648. Also a series in Ber. 17, 408.
" " "	"	1.8273, 10°	
" " "	"	1.8269, 20°	
" " "	"	1.8265, 30°	
" " "	"	1.8260, 40°	Spring. Ber. 16, 2724.
" " "	"	1.8255, 50°	
" " "	"	1.8223, 60°	
" " "	"	1.8044, 70°	
" " "	"	1.7456, 80°	Spring. Ber. 16, 2724.
" " "	"	1.828, 20°, not pressed.	
" " "	"	1.823, 16°.5, once pressed.	Soret. C. R. 99, 867.
" " "	"	1.817	
Rubidium chrome alum	$Rb Cr (SO_4)_2 \cdot 12 H_2O$	1.967 }	Pettersson. U. N. A. 1874.
" " "	"	1.969 }	Soret. C. R. 99, 867.
" " "	"	1.946	
Cesium chromium alum	$Cs Cr (SO_4)_2 \cdot 12 H_2O$	2.043	" "
Ammonium chrome alum	$Am Cr (SO_4)_2$	1.9943, 14°.7	Pettersson. U. N. A. 1876.
" " "	$Am Cr (SO_4)_2 \cdot 12 H_2O$	1.738, 21°	Schröder. P. A. 53, 513.
" " "	"	1.728, 20°	Pettersson. U. N. A. 1874.
" " "	"	1.719	Soret. C. R. 99, 867.
Thallium chrome alum	$Tl Cr (SO_4)_2 \cdot 12 H_2O$	2.392, 15°	Pettersson. U. N. A. 1874.
" " "	"	2.402, 18°	
" " "	"	2.236	Soret. C. R. 99, 867.
Potassium iron alum	$K Fe (SO_4)_2 \cdot 12 H_2O$	1.831	Topsøe. C. C. 4, 76.
" " "	"	1.819, 16°.8	Pettersson. U. N. A. 1874.
" " "	"	1.822, 17°.5	
" " "	"	1.831, 17°	
" " "	"	1.806	Soret. C. R. 99, 867.
Rubidium iron alum	$Rb Fe (SO_4)_2 \cdot 12 H_2O$	1.916	" "
Cesium iron alum	$Cs Fe (SO_4)_2 \cdot 12 H_2O$	2.061	" "
Ammonium iron alum	$Am Fe (SO_4)_2$	2.54, 16°.8	Pettersson. U. N. A. 1874.
" " "	$Am Fe (SO_4)_2 \cdot 12 H_2O$	1.712	Kopp. A. C. P. 36, 1.
" " "	"	1.718	Playfair and Joule. M. C. S. 2, 401.
" " "	"	1.719	Topsøe. C. C. 4, 76.
" " "	"	1.700	Schröder. Dm. 1873.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Ammonium iron alum	$\text{AmFe}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.720, 18°.2	Pettersson. U. N. A. 1874.
" " "	"	1.723, 18°	
" " "	"	1.725, 17°	
" " "	"	1.713	
Thallium iron alum	$\text{TlFe}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.351, 15	Pettersson. U. N. A. 1874.
" " "	"	2.385	Soret. C. R. 99, 867.
Potassium gallium alum	$\text{K Ga}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.895	Soret. C. R. 101, 156.
Rubidium gallium alum	$\text{Rb Ga}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.962	" "
Ammonium gallium alum	$\text{Am Ga}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.745	Soret. C. R. 99, 867.
" " "	"	1.776	Soret. C. R. 101, 156.
Rubidium indium alum	$\text{Rb In}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.065	" "
Cesium indium alum	$\text{Cs In}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.241	" "
Ammonium indium alum	$\text{Am In}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.011	Soret. C. R. 99, 867.
Sonomaite	$\text{Mg}_3\text{Al}_2(\text{SO}_4)_6 \cdot 33\text{H}_2\text{O}$	1.604	Goldsmith. J. 30, 1297.
Roemerite. (Ferroso-ferrie sulphate.)	$\text{Fe}_3(\text{SO}_4)_4 \cdot 12\text{H}_2\text{O}$	2.15—2.18	Grailich. J. 11, 730.
Uranyl potassium sulphate	$\text{UO}_2\text{K}_2(\text{SO}_4)_2 \cdot 2\text{H}_2\text{O}$	3.363, 19°.1	Schmidt. F. W. C.
Uranyl ammonium sulphate.	$\text{UO}_2\text{Am}_2(\text{SO}_4)_2 \cdot 2\text{H}_2\text{O}$	3.0131, 21°.5	" "
Didymium ammonium sulphate.	$\text{Am Di}(\text{SO}_4)_2$	3.075 } 15°	Cleve. U. N. A. 1885.
" " "	"	3.086 }	
" " "	$\text{Am Di}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$	2.575, 15°	
" " "	"	2.575, 18°	
Samarium ammonium sulphate.	$\text{Am Sm}(\text{SO}_4)_2$	3.191, 18°	" "
" " "	$\text{Am Sm}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$	2.674 } 18°.4	" "
" " "	"	2.677 }	

## 3d. Basic and Ammonio-Sulphates.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Tetrabasic zinc sulphate.	$\text{Zn}_4\text{S O}_{17} \cdot 4\text{H}_2\text{O}$	3.122	Playfair and Joule. M. C. S. 2, 401.
Mercuric orthosulphate, or turpeth mineral.	$\text{Hg}_3\text{S O}_6$	8.319	" "
Tetrabasic copper sulphate.	$\text{Cu}_4\text{S O}_{17} \cdot 4\text{H}_2\text{O}$	3.082, m. of 2	Maskelyne. J. 18, 901.
" " Langite.	"	3.48	
" " "	"	3.50	
Herregrundite	$\text{Cu}_3\text{S}_2\text{O}_{11} \cdot 7\text{H}_2\text{O}$	3.132	Winkler. Dana's Min., 3d App.
Brochantite	$\text{Cu}_3\text{S}_2\text{O}_{13} \cdot 5\text{H}_2\text{O}$	3.78—3.87	Magnus. P. A. 14, 141.
"	"	3.9069	G. Rose. Dana's Min.
" Warringtonite	"	3.39—3.47	Maskelyne. J. 18, 902.

• Composition uncertain, because of variations in the analyses.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lanarkite -----	$\text{Pb}_2 \text{S O}_3$ -----	6.3—6.4 -----	Thomson.
Linarite -----	$\text{Pb Cu S O}_5 \cdot \text{H}_2 \text{O}$ -----	5.43 -----	Brooke. Ann. Phil. (2), 4, 117.
Alumian -----	$\text{Al}_2 \text{S}_2 \text{O}_7$ -----	2.702 -----	Breithaupt. J. 11, 730.
" -----	" -----	2.781 -----	
Werthemanite -----	$\text{Al}_2 \text{S O}_6 \cdot 3 \text{H}_2 \text{O}$ -----	2.80 -----	Raimondi. Dana's Min., 3d App.
Aluminite -----	$\text{Al}_2 \text{S O}_6 \cdot 9 \text{H}_2 \text{O}$ -----	1.66 -----	Dana's Mineralogy.
Felsobanyite -----	$\text{Al}_4 \text{S O}_9 \cdot 10 \text{H}_2 \text{O}$ -----	2.33 -----	Haidinger. J. 7, 863.
Alunite -----	$\text{K}_2 \text{Al}_6 \text{S}_4 \text{O}_{22} \cdot 6 \text{H}_2 \text{O}$ -----	2.481 -----	Gautier-Lacroze. J. 16, 833.
Löwigite -----	$\text{K}_2 \text{Al}_6 \text{S}_4 \text{O}_{22} \cdot 9 \text{H}_2 \text{O}$ -----	2.58 -----	Romer. J. 9, 877.
Zincaluminite -----	$\text{Zn}_6 \text{Al}_6 \text{S}_2 \text{O}_{21} \cdot 18 \text{H}_2 \text{O}$ -----	2.26 -----	Bertrand and Da- mour. Z. K. M. 6, 298.
Ettringite -----	$\text{Ca}_6 \text{Al}_2 \text{S}_3 \text{O}_{18} \cdot 32 \text{H}_2 \text{O}$ -----	1.7504 -----	Lehmann. N. J. 1874, 273.
Amarantite -----	$\text{Fe}_2 \text{S}_2 \text{O}_9 \cdot 7 \text{H}_2 \text{O}$ -----	2.11 -----	Frenzel. M. P. M. 9, 398.
Raimondite -----	$\text{Fe}_4 \text{S}_3 \text{O}_{15} \cdot 7 \text{H}_2 \text{O}$ -----	3.190 -----	Breithaupt. J. 19, 952.
" -----	" -----	3.222 -----	
Hohmannite -----	$\text{Fe}_4 \text{S}_3 \text{O}_{15} \cdot 13 \text{H}_2 \text{O}$ -----	2.24 -----	Frenzel. M. P. M. 9, 397.
Copiapite -----	$\text{Fe}_4 \text{S}_3 \text{O}_{21} \cdot 12 \text{H}_2 \text{O}$ -----	2.14 -----	Borcher. Dana's Min.
Fibroferrite -----	$\text{Fe}_4 \text{S}_5 \text{O}_{21} \cdot 27 \text{H}_2 \text{O}$ -----	1.84 -----	Smith. A. J. S. (2), 18, 375.
Carphosiderite -----	$\text{Fe}_6 \text{S}_4 \text{O}_{21} \cdot 10 \text{H}_2 \text{O}$ -----	2.728 -----	Pisani. Dana's Min.
" -----	" -----	2.496—2.501 -----	Breithaupt. Schw. J. 50, 314.
" -----	" -----	3.09 -----	Lacroix. C. R. 103, 1037.
Jarosite -----	$\text{K}_2 \text{Fe}_8 \text{S}_5 \text{O}_{28} \cdot 9 \text{H}_2 \text{O}$ -----	3.256 -----	Breithaupt. J. 6, 845.
Urusite -----	$\text{Na}_4 \text{Fe}_2 \text{S}_3 \text{O}_{17} \cdot 8 \text{H}_2 \text{O}$ -----	2.22 -----	Frenzel J. 32, 1195.
Sideronatriite -----	$\text{Na}_2 \text{Fe}_2 \text{S}_3 \text{O}_{13} \cdot 6 \text{H}_2 \text{O}$ -----	2.153 -----	Dana's Min., 3d App.
Silver ammonio-sulphate -----	$\text{Ag}_2 \text{S O}_4 \cdot 4 \text{N H}_3$ -----	2.918, m. of 2 -----	Playfair and Joule. M. C. S. 2, 401.
Zincammonium sulphate -----	$\text{Zn N}_2 \text{H}_6 \cdot \text{S O}_4$ -----	2.479 -----	" " "
Tetramercurammonium sulphate. -----	$\text{Hg}_4 \text{N}_2 \text{S O}_4 \cdot 2 \text{H}_2 \text{O}$ -----	7.319 -----	" " "
Cuprammonium sulphate -----	$\text{Cu N}_2 \text{H}_6 \cdot \text{S O}_4$ -----	2.476 -----	" " "
" " -----	$\text{Cu N}_2 \text{H}_6 \cdot \text{S O}_4 \cdot 3 \text{H}_2 \text{O}$ -----	1.950 -----	" " "
Copper ammonio-sulphate -----	$\text{Cu S O}_4 \cdot 4 \text{N H}_3 \cdot \text{H}_2 \text{O}$ -----	1.790 -----	" " "
" " -----	" -----	1.809 -----	
" " -----	" -----	2.133, 24° 3' -----	Evans. F. W. C.
Roseocobalt iodosulphate. -----	$\text{Co}_2 (\text{N H}_3)_{10} (\text{S O}_4)_2 \text{I}_2$ -----	2.139 -----	
" " -----	" -----	2.149 -----	Wilson. F. W. C.

NOTE.—Botryogen, clinophæite, johannite, lamprophænite, pissophanite, plagiocic-  
trite, and wattervillite, being of uncertain composition, are omitted. See Dana's  
Mineralogy and appendixes.

## XXIII. SELENITES AND SELENATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen selenite, or selenious acid.	$\text{H}_2\text{SeO}_3$	3.123	Topsoe, C. C. 4, 76.
“ “ “	“	3.0065	Clausnizer, A. C. P. 196, 265.
Chalcocomenite	$\text{Cu Se O}_3 \cdot 2\text{H}_2\text{O}$	3.76	Des Cloizeaux and Damour, B. S. M. 4, 51.
Mercurous selenite	$3\text{Hg}_2\text{O} \cdot 4\text{SeO}_2$	7.35, 137.5	Kohler, P. A. 89, 149.
Hydrogen selenate, or selenic acid.	$\text{H}_2\text{SeO}_4$	2.524	Mitscherlich, P. A. 9, 629.
“ “ “	“	2.625	Fabian, J. 14, 130.
“ “ “	“	2.627	Topsoe, C. C. 4, 76.
Lithium selenate	$\text{Li}_2\text{SeO}_4 \cdot \text{H}_2\text{O}$	2.439	Pettersson, U. N. A. 1874.
“ “ “	“	2.564, 187.5	“
“ “ “	“	2.565, 197.5	“
Sodium selenate	$\text{Na}_2\text{SeO}_4$	3.098	Topsoe, B. S. C. 19, 246.
“ “ “	“	3.209, 177.2	Pettersson, U. N. A. 1874.
“ “ “	“	3.217, 177.6	“
“ “ “	$\text{Na}_2\text{SeO}_4 \cdot 10\text{H}_2\text{O}$	1.584	Topsoe, C. C. 4, 76.
“ “ “	“	1.612, m. of 5	“
“ “ “	“	1.605 extremes	Pettersson, U. N. A. 1874.
“ “ “	“	1.621, 177.9-19	“
Potassium selenate	$\text{K}_2\text{SeO}_4$	3.050	Topsoe, C. C. 4, 76.
“ “ “	“	3.074, 18	“
“ “ “	“	3.077, 19	Pettersson, U. N. A. 1874.
“ “ “	“	3.077, 21	“
Sodium potassium selenate	$\text{Na}_2\text{SeO}_4 \cdot 3\text{K}_2\text{SeO}_4$	3.095	Topsoe, C. C. 4, 76.
Rubidium selenate	$\text{Rb}_2\text{SeO}_4$	3.923, m. of 5	“
“ “ “	“	3.896 extremes	Pettersson, U. N. A. 1874.
“ “ “	“	3.943, 187.8-198	“
Cesium selenate	$\text{Cs}_2\text{SeO}_4$	4.31, 157.2	Pettersson, U. N. A. 1876.
“ “ “	“	4.34, 157.5	“
Ammonium selenate	$\text{Am}_2\text{SeO}_4$	2.162	Topsoe, B. S. C. 19, 246.
“ “ “	“	2.197, 18	Pettersson, U. N. A. 1874.
“ “ “	“	2.198, 187.8	“
Ammonium hydrogen selenate	$\text{Am H Se O}_4$	2.169	Topsoe, C. C. 4, 76.
Silver selenate	$\text{Ag}_2\text{SeO}_4$	5.92, 177.2	Pettersson, U. N. A. 1874.
“ “ “	“	5.95, 17	“
Silver ammonio-selenate	$\text{Ag}_2\text{SeO}_4 \cdot 4\text{N H}$	2.844	Topsoe, C. C. 4, 76.
Thallium selenate	$\text{Tl}_2\text{SeO}_4$	7.919, 187.5	Pettersson, U. N. A. 1874.
“ “ “	“	7.967, 187.2	“
Glucinum selenate	$\text{Gl Se O}_4 \cdot 4\text{H}_2\text{O}$	2.029	Topsoe, C. C. 4, 76.
Magnesium selenate	$\text{Mg Se O}_4 \cdot 6\text{H}_2\text{O}$	1.928	“ “
“ “ “	“	1.955, 157.2	Pettersson, U. N. A. 1876.
“ “ “	“	1.960, 157.8	“
Zinc selenate	$\text{Zn Se O}_4 \cdot 5\text{H}_2\text{O}$	2.591	Topsoe, C. C. 4, 76.
“ “ “	$\text{Zn Se O}_4 \cdot 6\text{H}_2\text{O}$	2.325	“ “
Cadmium selenate	$\text{Cd Se O}_4 \cdot 2\text{H}_2\text{O}$	3.632	“ “

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Calcium selenate. Cryst.	$\text{Ca Se O}_4$	2.93	Michel. C. R. 106, 878.
“ “	$\text{Ca Se O}_4 \cdot 2 \text{H}_2 \text{O}$	2.676	Topsoë. C. C. 4, 76.
Strontium selenate. Cryst.	$\text{Sr Se O}_4$	4.23	Michel. C. R. 106, 878.
Barium selenate	$\text{Ba Se O}_4$	4.67, 22°	Schafarik. J. P. C. 90, 12.
“ “ Cryst.	“	4.75	Michel. C. R. 106, 878.
Lead selenate	$\text{Pb Se O}_4$	6.37, 22°	Schafarik. J. P. C. 90, 12.
“ “	“	6.22, 18°	Pettersson. U. N. A. 1874.
“ “	“	6.23, 18° 2	
Manganese selenate	$\text{Mn Se O}_4 \cdot 2 \text{H}_2 \text{O}$	2.949	Topsoë. B. S. C. 19, 246.
“ “	“	3.001, 15° 8	Pettersson. U. N. A. 1876.
“ “	“	3.012, 16° 6	
“ “	$\text{Mn Se O}_4 \cdot 5 \text{H}_2 \text{O}$	2.334	Topsoë. B. S. C. 19, 246.
“ “	“	2.386	Pettersson. U. N. A. 1876.
“ “	“	2.389	
Iron selenate	$\text{Fe Se O}_4 \cdot 7 \text{H}_2 \text{O}$	2.073	Topsoë. B. S. C. 19, 246.
Nickel selenate	$\text{Ni Se O}_4 \cdot 6 \text{H}_2 \text{O}$	2.314	“ “
“ “	“	2.332, 14° 1	Pettersson. U. N. A. 1876.
“ “	“	2.335, 13° 8	
“ “	“	2.339, 13° 8	
Cobalt selenate	$\text{Co Se O}_4$	4.037, 14° 2	“ “
“ “	$\text{Co Se O}_4 \cdot 5 \text{H}_2 \text{O}$	2.512	Topsoë. C. C. 4, 76.
“ “	$\text{Co Se O}_4 \cdot 6 \text{H}_2 \text{O}$	2.179	“ “
“ “	“	2.247, 14° 6	Pettersson. U. N. A. 1876.
“ “	“	2.248, 17°	
“ “	“	2.258, 15° 8	
“ “	$\text{Co Se O}_4 \cdot 7 \text{H}_2 \text{O}$	2.135	Topsoë. C. C. 4, 76.
Copper selenate	$\text{Cu Se O}_4 \cdot 5 \text{H}_2 \text{O}$	2.559	
“ “	“	2.561, 19° 2	Pettersson. U. N. A. 1874.
“ “	“	2.562, 17° 8	
Yttrium selenate	$\text{Y}_2 (\text{Se O}_4)_3 \cdot 9 \text{H}_2 \text{O}$	2.6770, 18°	Cleveland Hoeglund. B. S. C. 18, 289.
“ “	“	2.780	Topsoë. Quoted by Pettersson.
“ “	“	2.661, 12° 8	Pettersson. U. N. A. 1876.
Erbium selenate	$\text{Er}_2 (\text{Se O}_4)_3 \cdot 8 \text{H}_2 \text{O}$	3.516	Topsoë. Quoted by Pettersson.
“ “	“	3.501, 13° 8	Pettersson. U. N. A. 1876.
“ “	“	3.510, 14°	
“ “	“	3.529, 13° 4	
“ “	$\text{Er}_2 (\text{Se O}_4)_3 \cdot 9 \text{H}_2 \text{O}$	3.171	Topsoë. Quoted by Pettersson.
Lanthanum selenate	$\text{La}_2 (\text{Se O}_4)_3 \cdot 6 \text{H}_2 \text{O}$	3.48, 14° 4	Pettersson. U. N. A. 1876.
Didymium selenate	$\text{Di}_2 (\text{Se O}_4)_3$	4.416	Cleve. U. N. A. 1885.
“ “	“	4.430	
“ “	“	4.460	
“ “	“	4.461	
“ “	$\text{Di}_2 (\text{Se O}_4)_3 \cdot 5 \text{H}_2 \text{O}$	3.710, 13° 8	Pettersson. U. N. A. 1876.
“ “	“	3.722, 13° 3	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Didymium selenate-----	$\text{Di}_2(\text{SeO}_4)_3 \cdot 5 \text{H}_2\text{O}$	3.677, 15°	Cleve, U. S. A. 1885.
" "-----	" "	3.685, 18° 3'	
Samarium selenate-----	$\text{Sm}_2(\text{SeO}_4)_3$	4.077, 10°	
" "-----	$\text{Sm}_2(\text{SeO}_4)_3 \cdot 8 \text{H}_2\text{O}$	3.326 } 13°	
" "-----	" "	3.329 }	
" "-----	$\text{Sm}_2(\text{SeO}_4)_3 \cdot 12 \text{H}_2\text{O}$	3.009 } 10°	" "
" "-----	" "	3.010 }	
Thorium selenate-----	$\text{Th}(\text{SeO}_4)_2 \cdot 9 \text{H}_2\text{O}$	3.026-----	Topsoë, B. S. C. 21, 121.
Magnesium potassium selenate,	$\text{MgK}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.336-----	Topsoë, C. C. 4, 76.
Magnesium ammonium selenate,	$\text{MgAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.035-----	Topsoë, B. S. C. 19, 246.
Zinc potassium selenate--	$\text{ZnK}_2(\text{SeO}_4)_2 \cdot 2 \text{H}_2\text{O}$	3.210-----	Topsoë, C. C. 4, 76.
" "-----	$\text{ZnK}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.538-----	" "
Zinc ammonium selenate	$\text{ZnAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.200-----	" "
Cadmium potassium selenate,	$\text{CdK}_2(\text{SeO}_4)_2 \cdot 2 \text{H}_2\text{O}$	3.373-----	" "
Cadmium ammonium selenate,	$\text{CdAm}_2(\text{SeO}_4)_2 \cdot 2 \text{H}_2\text{O}$	2.897-----	" "
" "-----	$\text{CdAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.307-----	" "
Manganese potassium selenate,	$\text{MnK}_2(\text{SeO}_4)_2 \cdot 2 \text{H}_2\text{O}$	3.070-----	Topsoë, B. S. C. 19, 246.
Manganese ammonium selenate,	$\text{MnAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.093-----	Topsoë, C. C. 4, 76.
Iron ammonium selenate,	$\text{FeAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.160-----	" "
Nickel potassium selenate	$\text{NiK}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.539-----	" "
" "-----	" "	2.580, m. of 5.	Pettersson, U. S. A. 1876.
" "-----	" "	2.573 extremes	
" "-----	" "	2.587 (19.4-17.3)	
Nickel ammonium selenate,	$\text{NiAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.228-----	Topsoë, C. C. 4, 76.
" "-----	" "	2.274, 15° 8'	Pettersson, U. S. A. 1876.
" "-----	" "	2.279, 16°	
Nickel thallium selenate	$\text{NiTl}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	4.066, 13° 3'	" "
Cobalt potassium selenate	$\text{CoK}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.514-----	Topsoë, C. C. 4, 76.
" "-----	" "	2.531, 18° 8'	Pettersson, U. S. A. 1876.
" "-----	" "	2.543, 17° 4'	
Cobalt rubidium selenate,	$\text{CoRb}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.837, 18° 3'	" "
" "-----	" "	2.838, 15° 6'	
" "-----	" "	2.844, 18° 6'	
Cobalt cesium selenate	$\text{CoCs}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	3.050, 18° 5'	" "
" "-----	" "	3.061, 16° 7'	
" "-----	" "	3.073, 18° 8'	
Cobalt ammonium selenate	$\text{CoAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.212-----	Topsoë, C. C. 4, 76.
" "-----	" "	2.225, 18° 8'	Pettersson, U. S. A. 1876.
" "-----	" "	2.229, 17°	
" "-----	" "	2.248, 15° 8'	
Cobalt thallium selenate	$\text{CoTl}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	4.047, 13° 5'	" "
" "-----	" "	4.059, 16° 5'	
Copper potassium selenate	$\text{CuK}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.527-----	Topsoë, C. C. 4, 76.
" "-----	" "	2.556, 17°	Pettersson, U. S. A. 1876.
" "-----	" "	2.557, 16° 4'	
Copper ammonium selenate	$\text{CuAm}_2(\text{SeO}_4)_2 \cdot 6 \text{H}_2\text{O}$	2.221-----	Topsoë, C. C. 4, 76.
" "-----	" "	2.234, 17° 2'	Pettersson, U. S. A. 1876.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium aluminum alum.	$\text{NaAl}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.061, 21°	Pettersson. U. N. A. 1874.
" " "	"	2.069, 20°·8	
" " "	"	2.071, 20°·8	
Potassium aluminum alum	$\text{KAl}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.971 -----	Weber. J. 12, 91.
" " "	"	1.998, 21°	Pettersson. U. N. A. 1874.
" " "	"	2.004, 20°·1	
Ammonium aluminum alum.	$\text{AmAl}(\text{SeO}_4)_2$	2.3676, 20°·4	Pettersson. U. N. A. 1876.
" " "	$\text{AmAl}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.892, m. of 4.	Pettersson. U. N. A. 1874.
" " "	"	1.889 } extremes	
" " "	"	1.895 } 17°-20°·5	
Rubidium aluminum alum	$\text{RbAl}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.132, 17°·2	" "
" " "	"	2.134, 21°	
" " "	"	2.135, 17°·2	
Cæsium aluminum alum.	$\text{CsAl}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.223, 18°·8	" "
" " "	"	2.225, 20°	
Thallium aluminum alum	$\text{TlAl}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.492, 17°·5	" "
" " "	"	2.514, 17°	
Potassium chromium alum	$\text{KCr}(\text{SeO}_4)_2$	2.5190, 20°·3	Pettersson. U. N. A. 1876.
" " "	$\text{KCr}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.076, 17°·6	Pettersson. U. N. A. 1874.
" " "	"	2.077, 17°	
" " "	"	2.081, 17°·2	
Ammonium chromium alum.	$\text{AmCr}(\text{SeO}_4)_2$	2.3585, 15°·5	Pettersson. U. N. A. 1876.
" " "	$\text{AmCr}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	1.980 } 20°	Pettersson. U. N. A. 1874.
" " "	"	1.984 }	
Rubidium chromium alum	$\text{RbCr}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.214, 18°·8	" "
" " "	"	2.223, 17°	
Thallium chromium alum	$\text{TlCr}(\text{SeO}_4)_2 \cdot 12\text{H}_2\text{O}$	2.630, 20 -----	" "
Didymium potassium selenate.	$\text{DiK}(\text{SeO}_4)_2$	3.839, 13° ----	Cleve. U. N. A. 1885.
" " "	$\text{DiK}(\text{SeO}_4)_2 \cdot 5\text{H}_2\text{O}$	3.174 }	" "
" " "	"	3.178 }	
Didymium ammonium selenate.	$\text{DiAm}(\text{SeO}_4)_2 \cdot 5\text{H}_2\text{O}$	2.957 }	" "
" " "	"	2.961 }	
Samarium potassium selenate.	$\text{SmK}(\text{SeO}_4)_2$	4.098 }	" "
" " "	"	4.129 }	
" " "	$\text{SmK}(\text{SeO}_4)_2 \cdot 3\text{H}_2\text{O}$	3.566, 10° -- }	" "
" " "	"	3.540, 18° -- }	
Samarium ammonium selenate.	$\text{SmAm}(\text{SeO}_4)_2$	3.805, 14° ----	" "
" " "	$\text{SmAm}(\text{SeO}_4)_2 \cdot 3\text{H}_2\text{O}$	3.277, 14°	" "
" " "	"	3.263, 15°	
" " "	"	3.260, 18°·6	
Potassium selenate with nickel sulphate.	$\text{K}_2\text{SeO}_4 \cdot \text{NiSO}_4 \cdot 6\text{H}_2\text{O}$	2.34 -----	Gerichten. B. S. C 20, 80.

NOTE.—For the sp. gr. of some mixtures of sulphates and selenates see Pettersson, Ber. 9, 1676.

## XXIV. TELLURATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen tellurate, or telluric acid.	$\text{H}_2 \text{Te O}_4$	3.425, 18°.8	Clarke. A. J. S. (3), 16, 206.
" " "	"	3.440, 19°.2	
" " "	$\text{H}_2 \text{Te O}_4 \cdot 2 \text{H}_2 \text{O}$	2.340	
" " "	"	2.9649, 26°.5	Clarke. A. J. S. (3), 16, 206.
" " "	"	2.9699, 25°.5	
Ammonium tellurate	$\text{Am}_2 \text{Te O}_4$	2.986, 24°.5	" "
" " "	"	3.012, 25°	
" " "	"	3.024, 24°.5	
Thallium tellurate	$\text{Tl}_2 \text{Te O}_4$	6.712, 16°	" "
" " "	"	6.760, 17°.5	
" " "	$2 \text{Tl}_2 \text{Te O}_4 \cdot \text{H}_2 \text{O}$	5.687, 22°	" "
" " "	"	5.712, 20°	
Barium tellurate	$\text{Ba Te O}_4$	4.5305, 10°	Clarke. A. J. S. (3), 14, 286.
" " "	"	4.5486, 10°.5	

## XXV. CHROMATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium chromate	$\text{Na}_2 \text{Cr O}_4$	2.7104, 16°.5	Abbot. F. W. C.
" " "	"	2.7358, 12°	
" " "	$\text{Na}_2 \text{Cr O}_4 \cdot 10 \text{H}_2 \text{O}$	1.4828, 20°	" "
Sodium dichromate	$\text{Na}_2 \text{Cr}_2 \text{O}_7 \cdot 2 \text{H}_2 \text{O}$	2.5243, 13°	
Potassium chromate	$\text{K}_2 \text{Cr O}_4$	2.612	Thomson.
" " "	"	2.6402	Karsten. Schw. J. 65, 394.
" " "	"	2.705	Kopp. A. C. P. 36, 1.
" " "	"	2.682, m. of 10	Playfair and Joule. M. C. S. 2, 401.
" " "	"	2.711	Playfair and Joule. J. C. S. 1, 137.
" " "	"	2.72309, 4°	Helker. P. M. (3), 27, 213.
" " "	"	2.678, 15°.5	
" " "	"	2.691	Schiff. A. C. P. 107, 64.
" " "	"	2.7343	Stoll. J. P. C. 97, 503.
" " "	"	2.719	Schroder. Dm. 1873.
" " "	"	2.722	
" " "	"	2.7403, 0°	
" " "	"	2.7374, 10°	
" " "	"	2.7345, 20°	
" " "	"	2.7317, 30°	
" " "	"	2.7288, 40°	Spring. Ber. 15, 1940.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium chromate ----	$K_2 Cr O_4$ -----	2.7258, 50°	Spring. Ber. 15, 1940.
" " ----	" -----	2.7227, 60°	
" " ----	" -----	2.7169, 70°	
" " ----	" -----	2.7110, 80°	
" " ----	" -----	2.7102, 90°	
" " ----	" -----	2.7095, 100°	Karsten. Schw. J. 65, 394.
Potassium dichromate ----	$K_2 Cr_2 O_7$ -----	2.6027 -----	
" " ----	" -----	2.624 -----	
" " ----	" -----	2.692, 4° -----	
" " ----	" -----	2.689 -----	
" " ----	" -----	2.721 -----	Schabus. J. 3, 312. Schröder. A. C. P. 107, 64.
" " ----	" -----	2.6616 -----	
" " ----	" -----	2.6806 -----	
" " Pulv. ----	" -----	2.702 -----	
" " After } ----	" -----	2.677 -----	
" " fusion. } ----	" -----	2.751 -----	Schröder. Ber. 11, 2019.
" " ----	" -----	2.694 -----	
Potassium trichromate ---	$K_2 Cr_3 O_{10}$ -----	2.655, m. of 3. ---	
" " ----	" -----	3.613 -----	
" " ----	" -----	2.676 -----	
" " ----	" -----	2.702 -----	Schröder. A. C. P. 174, 249.
Potassium chromium chromate.	$K_2 Cr_5 O_{13} \cdot H_2 O$ ----	2.28, 14° -----	
Ammonium chromate ----	$Am_2 Cr O_4$ -----	1.9138 -----	Tommasi. B. S. C. (2), 17, 396.
" " ----	" -----	1.9203 -----	
" " ----	" -----	1.860 -----	
" " ----	" -----	1.871 -----	
Ammonium dichromate ----	$Am_2 Cr_2 O_7$ -----	2.367 -----	
" " ----	" -----	2.152 -----	Abbott. F. W. C.
" " ----	" -----	2.153 -----	
" " ----	" -----	2.1223, 16° -----	
" " ----	" -----	2.1805, 17° -----	
Silver chromate ----	$Ag_2 Cr O_4$ -----	5.770 -----	Schröder. Dm. 1873.
" " ----	" -----	5.536 -----	
" " ----	" -----	5.463 -----	
" " ----	" -----	5.583 -----	
Silver dichromate ----	$Ag_2 Cr_2 O_7$ -----	4.662 -----	Abbott. F. W. C.
" " ----	" -----	4.676 -----	
Silver ammonio-chromate	$Ag_2 Cr O_4 \cdot 4 N H_3$ ----	3.063, m. of 3. ---	
" " " ----	" -----	2.717 -----	
Magnesium chromate ----	$Mg Cr O_4 \cdot H_2 O$ ----	2.2301 -----	Playfair and Joule. M. C. S. 2, 401.
" " ----	" -----	2.2886 -----	
" " ----	$Mg Cr O_4 \cdot 7 H_2 O$ ----	1.66, 15° -----	
" " ----	" -----	1.75, 12° -----	
" " ----	" -----	1.7613, 16° -----	
Trimereuric chromate ----	$Hg_3 Cr O_6$ -----	7.171, 18°.6 -----	Kopp. A. C. P. 42, 97.
Strontium chromate ----	$Sr Cr O_4$ -----	3.353 -----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Barium chromate	$\text{Ba Cr O}_4$	3.90, 11°	Bodeker and Giescke, B. D. Z.
" "	"	4.49, 23°	Schafarik, J. P. C. 90, 12.
" "	"	4.5044	Schweitzer, University of Missouri, Special pub., 1876.
" "	"	4.296	Schroder, Dm. 1873.
" "	"	4.304	
" " Cryst.	"	4.60	Bourgeois, C. N. 39, 123.
Lead chromate	$\text{Pb Cr O}_4$	6.004	Mohs. See Bottger.
" "	"	5.951	Breithaupt "
" "	"	5.653	Playfair and Joule, M. C. S. 2, 401.
" " Artif. cryst.	"	6.118	Manross, J. 5, 12.
" " " "	"	6.29	Bourgeois, B. S. C. 47, 884.
" " Native	"	5.965, m. of 3.	Schroder, Ber. 11, 2019.
Diplumbic chromate	$\text{Pb}_2 \text{Cr O}_5$	6.266	Playfair and Joule, M. C. S. 2, 401.
Phenicochroite	$\text{Pb}_3 \text{Cr}_2 \text{O}_9$	5.75	Dana's Mineralogy.
Potassium ammonium chromate.	$\text{K Am Cr O}_4$	2.278	Schroder, Dm. 1873.
" " "	"	2.290	
Potassium calcium chromate.	$\text{K}_2 \text{Ca}(\text{CrO}_4)_2 \cdot 2\text{H}_2\text{O}$	2.499	" "
" " " "	"	2.505	
" " " "	$\text{K}_2 \text{Ca}_4(\text{CrO}_4)_5 \cdot 2\text{H}_2\text{O}$	2.772	" "
" " " "	"	2.802	
Magnesium potassium chromate.	$\text{K}_2 \text{Mg}(\text{CrO}_4)_2 \cdot \text{H}_2\text{O}$	2.592	" "
" " " "	"	2.608	
" " " "	"	2.5804	192.5 Abbot, F. W. C.
" " " "	"	2.5906	
Magnesium ammonium chromate.	$\text{Am}_2 \text{Mg}(\text{CrO}_4)_2 \cdot 6\text{H}_2\text{O}$	1.8278, 16°	" "
" " " "	"	1.8293, 17°	
" " " "	"	1.8595, 16°	
Vauquelinite	$\text{Pb}_2 \text{Cu Cr}_2 \text{O}_9$	5.5—5.78	Dana's Mineralogy.
Potassium chlorochromate	$\text{K Cr O}_3 \text{Cl}$	2.466	Playfair and Joule, M. C. S. 2, 401.
" " "	"	2.49702, 4°	Playfair and Joule, J. C. S. 1, 137.
Sodium chromiodate	$\text{Na Cr I O}_6 \cdot \text{H}_2\text{O}$	3.21	Berg, C. R. 104, 1511
Potassium chromiodate	$\text{K Cr I O}_6$	3.66	" "
Ammonium chromiodate.	$\text{Am Cr I O}_6$	3.50	" "

## XXVI. MANGANITES, MANGANATES, AND PERMANGANATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Barium manganite -----	Ba Mn O <sub>3</sub> -----	5.85 -----	Rousseau and Saglier. C. R. 98, 141.
Barium manganate -----	Ba Mn O <sub>4</sub> -----	4.85, 23° -----	Schafarik. J. P. C. 90, 12.
Potassium permanganate -----	K Mn O <sub>4</sub> -----	2.709 } -----	Kopp. J. 16, 4.
“ “ -----	“ -----	2.710 } -----	

## XXVII. MOLYBDATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ammonium molybdate -----	Am <sub>2</sub> Mo O <sub>4</sub> -----	2.238 -----	Various samples. Schröder. Ber. 11, 2212.
“ “ -----	“ -----	2.261 -----	
“ “ -----	“ • -----	2.270 -----	
“ “ -----	“ -----	2.286 -----	
“ “ -----	“ -----	2.295 -----	
“ “ -----	18 Mo O <sub>3</sub> , 14 N H <sub>3</sub> , (O H) <sub>6</sub> , 18 H <sub>2</sub> O.	2.975 -----	Baerwald. J. C. S. 50, 17.
Strontium molybdate -----	Sr Mo O <sub>4</sub> -----	4.1348, 21° -----	F. O. Marsh. F. W. C.
“ “ -----	“ -----	4.1554, 20°.5 } -----	
Barium molybdate -----	Ba Mo O <sub>4</sub> -----	4.6483, 19°.5 } -----	“ “
“ “ -----	“ -----	4.6589, 17°.5 } -----	
Lead molybdate -----	Pb Mo O <sub>4</sub> -----	8.11, artificial -----	Manross. J. 5, 11.
“ “ -----	“ -----	6.62 “ -----	Cossa. G. C. I. 16, 324.
“ “ Wulfenite -----	“ -----	6.76 -----	Haidinger.
“ “ “ -----	“ -----	6.95 -----	Smith. J. 8, 963.
Cerium molybdate -----	Ce <sub>2</sub> (Mo O <sub>4</sub> ) <sub>3</sub> -----	4.56, cryst. -----	Cossa. G. C. I. 16, 324.
“ “ -----	“ -----	4.82, ppt. -----	
Didymium molybdate -----	Di <sub>2</sub> (Mo O <sub>4</sub> ) <sub>3</sub> -----	4.75, cryst. -----	“ “
Samarium molybdate -----	Sm <sub>2</sub> (Mo O <sub>4</sub> ) <sub>3</sub> -----	5.95 -----	Cleve. B. S. C. 43, 162.
Samarium sodium molybdate.	Sm Na (Mo O <sub>4</sub> ) <sub>2</sub> -----	5.265 -----	Cleve. U. N. A. 1885.

## XXVIII. TUNGSTATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium tungstate	$\text{Na}_2 \text{W O}_4$	4.1743, 20% <sup>a</sup>	J. L. Davis, F. W. C.
" "	"	4.1833, 18% <sup>a</sup>	" "
" "	$\text{Na}_2 \text{W O}_4 \cdot 2 \text{H}_2 \text{O}$	3.2314, 19%	" "
" "	"	3.2588, 17% <sup>a</sup>	" "
Sodium metatungstate	$\text{Na}_2 \text{W}_4 \text{O}_{12} \cdot 10 \text{H}_2 \text{O}$	3.8467, 13%	Scheibler, J. 14, 219.
Sodium polytungstate	$\text{Na}_6 \text{W}_7 \text{O}_{41}$	5.4983	Scheibler, J. 14, 216.
" "	$\text{Na}_6 \text{W}_7 \text{O}_{41} \cdot 16 \text{H}_2 \text{O}$	3.987, 14%	" "
Sodium tungstoso-tungstate.	$\text{Na}_2 \text{W}_3 \text{O}_9^*$	6.017	Wright, J. 4, 348.
" " " "	$\text{Na}_2 \text{W}_4 \text{O}_{11}$	7.283	Scheibler, J. 14, 223.
Potassium tungstoso-tungstate.	$\text{K}_2 \text{W}_4 \text{O}_{12}$	7.085	Two preparations, Knorre, J. P. C. 26, 27, 62.
" " " "	"	7.095	
" " " "	"	7.135	
" " " "	$\text{K}_2 \text{W}_3 \text{O}_{11}$	7.6	Zettnow, J. 20, 224.
" " " "	$\text{K}_2 \text{W}_2 \text{O}_{10}$	6.53	Knorre, J. P. C. 26, 27, 92.
Sodium potassium tungstoso-tungstate.	$5 \text{K}_2 \text{W}_4 \text{O}_{12} \cdot 2 \text{Na}_2 \text{W}_3 \text{O}_9$	7.112	Knorre, J. P. C. 26, 27, 62.
Calcium tungstate	$\text{Ca W O}_4$	6.076, artif.	Manross, J. 5, 11.
" " Scheelite	"	6.04	Karsten, Schw. J. 65, 304.
" " " "	"	6.03	Rammelsberg, J. 3, 752.
" " " "	"	6.02	Bernoulli, J. 13, 783.
Barium tungstate	$\text{Ba W O}_4$	5.0035, 13% <sup>a</sup>	J. L. Davis, F. W. C.
" "	"	5.0422, 15%	" "
Barium metatungstate	$\text{Ba W}_4 \text{O}_{12} \cdot 9 \text{H}_2 \text{O}$	4.298, 14%	Scheibler, J. 14, 220.
Lead tungstate	$\text{Pb W O}_4$	8.232, artif.	Manross, J. 5, 11.
" " " "	"	8.238	
" " " "	"	8.1032	Kernelt, J. P. C. 42, 113.
" " " "	"	8.1275	
Manganese tungstate	$\text{Mn W O}_4$	6.7, artif.	Geuther and Forsberg, J. 14, 224.
" " Hubnerite	"	7.14	Breithaupt, Dana's Min.
" " " "	"	7.177, 24%	H. Holbrand, A. J. 8, 31, 27, 357.
Iron tungstate	$\text{Fe W O}_4$	7.1, artif.	Geuther and Forsberg, J. 14, 224.
" " Ferberite	"	7.169	Rammelsberg, J. 17, 875.
" " " "	"	6.801	Breithaupt, Dana's Min.
" " Ronnite	"	6.640	Ludcke, J. 32, 1196.
Iron-manganese tungstate	$2 \text{Mn W O}_4 \cdot 3 \text{Fe W O}_4$	7.0, artif.	Geuther and Forsberg, J. 14, 224.

\* Philipp. Ber. 15, 660 finds the specific gravity of all the "tungsten frozges" to vary between 7.2 and 7.3, at 16-18°.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Wolfram* -----	(Mn Fe) W O <sub>4</sub> -----	7.155 -----	Mohs. See Böttger.
" -----	" -----	7.097 -----	Gehlen. " "
" Fe <sub>2</sub> : Mn -----	" -----	7.4581 -----	Sipőcz. Ber. 19, 95.
Nickel tungstate -----	Ni W O <sub>4</sub> -----	6.8522, 22° -----	J. L. Davis. F.
" -----	" -----	6.8896, 20°.5 -----	W. C.
Cerium tungstate -----	Ce <sub>2</sub> (W O <sub>4</sub> ) <sub>3</sub> -----	6.514, 12° -----	Cossa and Zechini.
Didymium tungstate -----	Di <sub>2</sub> (W O <sub>4</sub> ) <sub>3</sub> -----	6.69, 14° -----	Ber. 13, 1861.
Samarium tungstate -----	Sm <sub>2</sub> O <sub>3</sub> . 12 W O <sub>3</sub> . } -----	3.992 } -----	Cossa. Ber. 14, 107.
" " -----	35 H <sub>2</sub> O. } -----	3.996 } 18°.4 -----	{ Cleve. U. N. A.
			{ 1885.

## XXIX. BORATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen borate, or boric acid. -----	H <sub>3</sub> B O <sub>3</sub> -----	1.479 -----	Kirwan.
" " " -----	" -----	1.4347, 15° -----	Stolba. J. 16, 667.
" " " -----	" -----	1.493, 20°.5 -----	Favre and Valson.
" " " -----	" -----	1.5463, 0° -----	} Ditte. Bei. 2, 67.
" " " -----	" -----	1.5172, 12° -----	
" " " -----	" -----	1.4165, 60° -----	
" " " -----	" -----	1.3828, 80° -----	
Sodium diborate -----	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> -----	2.367 -----	Filhol. Ann. (3),
" " -----	" -----	2.371, 20° -----	21, 415.
" " -----	" -----	2.368, 16° -----	Favre and Valson.
" " -----	" -----	2.370, 14°.2 -----	C. R. 77, 579.
" " -----	" -----	2.373, 18°.5 -----	} Bedson and Wil-
" " -----	" -----	2.5, fused -----	
" " -----	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> . 5 H <sub>2</sub> O -----	1.815 -----	liams. Ber. 14,
" " -----	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> . 10 H <sub>2</sub> O -----	1.757 -----	2553.
" " -----	" -----	1.723 -----	Quineke. P. A. 135,
" " -----	" -----	1.716 -----	642.
" " -----	" -----	1.74 -----	Payen. Q. J. S.
" " -----	" -----	1.730, m. of 2. -----	1828 (1), 483.
" " -----	" -----	1.692 -----	Watson.
" " -----	" -----	1.692 -----	Hassenfratz. Ann.
" " -----	" -----	1.7156 -----	28, 3.
" " -----	" -----	1.711, 20° -----	Mohs. See Böttger.
" " -----	" -----	1.736 -----	Payen. Q. J. S.
			1828 (1), 483.
			Playfair and Joule.
			M. C. S. 2, 401.
			Filhol. Ann. (3),
			21, 415.
			Buignet. J. 14, 15.
			Stolba. J. P. C. 97,
			503.
			Favre and Valson.
			C. R. 77, 579.
			W. C. Smith. Am.
			J. P. 53, 148.

\* See Dana's Mineralogy for many other determinations.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium borate	$K_2 B_4 O_7$	1.740	Buignet, J. 14, 15.
Pinnoite	$Mg B_2 O_4 \cdot 3 H_2 O$	2.27	Staute, Ber. 17, 1584.
Magnesium borate	$Mg_3 B_2 O_6$	2.987	Ebelmen, J. 4, 13.
Szabélyite	$Mg_3 B_4 O_{11} \cdot 3 H_2 O$	3.0	Peters, J. 16, 836.
Colemanite	$Ca_2 P_6 O_{11} \cdot 5 H_2 O$	2.428	Evans, J. 37, 1927.
Prieceite	$Ca_3 B_6 O_{15} \cdot 6 H_2 O$	2.262	Silliman, A. J. S.
"	"	2.298	(3), 6, 128.
" Pandermite	"	2.48	v. Rath, Dana's Min., 3d App.
Lead borate	$Pb B_2 O_4$	5.598	Heraupath, J. 2, 227.
Lead hydrogen borate	$Pb H B_3 O_6$	5.255	" "
Jeremejewite	$Al B O_3$	3.28	Danour, J. C. S. 44, 719.
Didymium orthoborate	$Di B O_3$	5.680	15° Cleve, U. N. A. 1885.
" "	"	5.721	
Didymium borate	$Di_4 B_2 O_9$	5.825	11° Nordenskiöld, J. 14, 197.
Samarium orthoborate	$Sm B O_3$	6.045	16° 4 Cleve, U. N. A. 1885.
" "	"	6.052	
Ulexite	$Na Ca B_3 O_9 \cdot 6 H_2 O$	1.65	How, A. J. S. (2), 24, 234.
Franklandite	$Na_4 Ca_2 B_{12} O_{27} \cdot 15 H_2 O$	1.65	Reynolds, J. 30, 1288.
Hydroboracite	$Mg_3 Ca_3 B_{16} O_{30} \cdot 18 H_2 O$	1.9	Hess, P. A. 31, 49.
Sussexite	$Mg Mn B_2 O_5 \cdot H_2 O$	3.42	Brush, A. J. S. (2), 46, 240.
Magnesium chromium borate	$Mg_6 Cr_6 B_4 O_{21}$	3.82	Ebelmen, J. 4, 13.
Magnesium iron borate	$Mg_6 Fe_6 B_4 O_{21}$	3.85	" "
Ludwigite	$Mg_6 Fe^{''''}_4 Fe^{'''}_2 H_4 B_3 O_{20} \cdot 4 O_{20} \cdot 1$	3.967	Tschermak, J. 27, 1278.
"	"	4.016	
Rhodizite	$Al_2 K B_3 O_6$	3.38	Danour, J. 37, 1927.
Boracite	$Mg_5 B_{16} O_{30} Cl_2$	2.9134	Karsten, J. 1, 1227.
"	"	2.974	Mohs. See Bottger.

## XXX. NITRATES.

## 1st. Simple Nitrates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen nitrate, or nitric acid.	$H N O_3$	1.5543, 15° 5	Kirwan, Gibb. Ann. 9, 266.
" " "	"	1.522, 12° 5	Mitscherlich, P. A. 18, 152.
" " "	"	1.503	A. Smith, J. 1, 386.
" " "	"	1.552, 15°	Millon, J. P. C. 29, 337.
" " "	$H N O_3 \cdot H_2 O$	1.486	A. Smith, J. 1, 386.
" " "	$H N O_3 \cdot 3 H_2 O$	1.424	" "
Nitric subhydrate	$2 H N O_3 \cdot N_2 O_5$	1.642, 18°	Weber, J. P. C. (2), 6, 357.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lithium nitrate -----	Li N O <sub>3</sub> -----	2.334 -----	Kremers. J. 10, 67.
“ “ -----	“ -----	2.442 -----	Troost. J. 10, 141.
Sodium nitrate -----	Na N O <sub>3</sub> -----	2.0964 -----	Hassenfratz. Ann. 28, 3.
“ “ -----	“ -----	2.096 -----	Klaproth.
“ “ -----	“ -----	2.1880 -----	Marx. See Böttger.
“ “ -----	“ -----	2.2256 -----	Karsten. Schw. J. 65, 394.
“ “ -----	“ -----	2.200 -----	Kopp. A. C. P. 36, 1.
“ “ -----	“ -----	2.182, m. of 4. -----	Playfair and Joule. M. C. S. 2, 401.
“ “ -----	“ -----	2.2606, 4° -----	Playfair and Joule. J. C. S. 1, 137.
“ “ -----	“ -----	2.26 -----	Filhol. Ann. (3), 21, 415.
“ “ -----	“ -----	2.256 -----	Schröder. P. A. 106, 226.
“ “ -----	“ -----	2.265 -----	Buignet. J. 14, 15.
“ “ -----	“ -----	2.236 -----	Kopp. J. 16, 4.
“ “ -----	“ -----	2.246, 15°.5 -----	Holker. P. M. (3), 27, 213.
“ “ -----	“ -----	2.24 -----	Page and Keightley. J. C. S. (2), 10, 566.
“ “ -----	“ -----	2.25 -----	
“ “ -----	“ -----	2.148 -----	W. C. Smith. Am. J. P. 53, 148.
“ “ Native -----	“ -----	2.18, 15°.5 -----	Forbes. P. M. (4), 32, 135.
“ “ “ -----	“ -----	2.290 -----	Hayes.
“ “ -----	“ -----	1.878, at the melting p't. -----	Melts 314°. Braun. P. A. 154, 190.
“ “ -----	“ -----	2.24 -----	Brügelmann. Ber. 17, 2359.
“ “ -----	Na N O <sub>3</sub> . 7 H <sub>2</sub> O -----	1.357, 0°, l. -----	Ditte. B. S. C. 24, 366.
Potassium nitrate -----	K N O <sub>3</sub> -----	1.9369 -----	Hassenfratz. Ann. 28, 3.
“ “ -----	“ -----	1.933 -----	Watson.
“ “ -----	“ -----	2.1006 -----	Karsten. Schw. J. 65, 394.
“ “ -----	“ -----	2.058 -----	Kopp. A. C. P. 36, 1.
“ “ -----	“ -----	2.070, m. of 3. -----	Playfair and Joule. M. C. S. 2, 401.
“ “ -----	“ -----	2.1078 -----	Playfair and Joule. J. C. S. 1, 137.
“ “ -----	“ -----	2.10657 -----	
“ “ -----	“ -----	2.09584 -----	
“ “ Large crystals. -----	“ -----	2.109 -----	Grassi. J. 1, 39.
“ “ Small crystals. -----	“ -----	2.143 -----	
“ “ After fusion. -----	“ -----	2.132 -----	
“ “ -----	“ -----	2.100 -----	Schiff. A. C. P. 112, 88.
“ “ -----	“ -----	2.086 -----	Schröder. P. A. 106, 226.
“ “ -----	“ -----	2.126 -----	Buignet. J. 14, 15.
“ “ -----	“ -----	2.105 -----	Kopp. J. 16, 4.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Potassium nitrate	$KNO_3$	2.074, 15°.5	Holker, P. M. 13, 27, 213.
" "	"	2.0845	Stollm. J. P. C. 97, 503.
" "	"	2.0904	"
" "	"	2.059, 0°	Quincke, P. A. 135, 612.
" "	"	2.06	Page and Keightley, J. C. S. (2), 10, 56.
" "	"	2.10355, cryst.	Nicol, P. M. (5), 15, 34.
" "	"	at 20°	
" "	"	2.09916, cryst.	
" "	"	at 110°	Braun. (Melts at 342°.) P. A. 151, 190.
" "	"	1.702, at the melting p't.	
Ammonium nitrate	$AmNO_3$	1.579	Hassensfratz, Ann. 28, 3.
" "	"	1.707	Kopp, A. C. P. 36, 1.
" "	"	1.635, m. of 3	Playfair and Joule, M. C. S. 2, 401.
" "	"	1.737, m. of 2	Schroder, P. A. 103, 226.
" "	"	1.709	Schiff, A. C. P. 112, 88.
" "	"	1.723	Buignet, J. 11, 15.
" "	"	1.6915	Stollm. J. P. C. 97, 503.
Silver nitrate	$AgNO_3$	1.5551	Karsten, Schw. J. 65, 394.
" "	"	4.336	Playfair and Joule, M. C. S. 2, 401.
" "	"	4.238	Schroder, P. A. 107, 113.
" "	"	4.253	
" "	"	4.271	
" "	"	4.328	
Thallium nitrate	$TlNO_3$	5.8	Lamy, J. 15, 186.
" "	"	5.55	Lamy and Des Cloizeaux, Nature 1, 116.
Magnesium nitrate	$Mg(NO_3)_2 \cdot 6H_2O$	1.461	Playfair and Joule, M. C. S. 2, 401.
Zinc nitrate	$Zn(NO_3)_2 \cdot 6H_2O$	2.063, 13°	Laws, F. W. C.
" "	"	2.067, 15°	
Cadmium nitrate	$Cd(NO_3)_2 \cdot 4H_2O$	2.430, 14°	" "
" "	"	2.460, 20°	
Mercurous nitrate	$HgNO_3 \cdot H_2O$	1.785, m. of 3	Playfair and Joule, M. C. S. 2, 401.
Calcium nitrate	$Ca(NO_3)_2$	2.249	Filhol, Ann. 1, 21, 415.
" "	"	2.472	Kremers, J. 10, 67.
" "	"	2.504, 17.39	Favre and Valson, C. R. 77, 579.
" "	$Ca(NO_3)_2 \cdot 4H_2O$	1.78	Filhol, Ann. (3), 21, 415.
" "	"	1.90, 15°.5, s.	Ordway, J. 12, 115.
" "	"	1.79, 15°.5, l.	
" "	"	1.878, 18°	Favre and Valson, C. R. 77, 579.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Strontium nitrate	$\text{Sr (N O}_3)_2$	3.0061	Hassenfratz. Ann. 28, 3.
" "	"	2.8901	Karsten. Schw. J. 65, 394.
" "	"	2.704	Playfair and Joule. M. C. S. 2, 401.
" "	"	2.857	Filhol. Ann. (3), 21, 415.
" "	"	2.962, m. of 4	Schröder. P. A. 106, 226.
" "	"	2.805	Buignet. J. 14, 15.
" "	"	2.980, 16°.8	Favre and Valson. C. R. 77, 579.
" "	$\text{Sr (N O}_3)_2 \cdot 4 \text{H}_2 \text{O}$	2.113	Filhol. Ann. (3), 21, 415.
" "	"	2.249, 15°.5	Favre and Valson. C. R. 77, 579.
Barium nitrate	$\text{Ba (N O}_3)_2$	2.9149	Hassenfratz. Ann. 28, 3.
" "	"	3.1848	Karsten. Schw. J. 65, 394.
" "	"	3.284, m. of 5	Playfair and Joule. M. C. S. 2, 401.
" "	"	3.16052, 4°	Playfair and Joule. J. C. S. 1, 137.
" "	"	3.200	Filhol. Ann. (3), 21, 415.
" "	"	3.222	Crystallized at different temperatures. Kremers. J. 5. 15.
" "	"	3.228	
" "	"	3.240	
" "	"	3.242	
" "	"	3.208	Schröder. P. A. 106, 226.
" "	"	3.241	
" "	"	3.404	Buignet. J. 14, 15.
" "	"	3.22	Brügelmann. Ber. 17, 2359.
Lead nitrate	$\text{Pb (N O}_3)_2$	4.068	Hassenfratz. Ann. 28, 3.
" "	"	4.769	Breithaupt. Schw. J. 68, 291.
" "	"	4.3993	Karsten. Schw. J. 65, 394.
" "	"	4.340	Kopp.
" "	"	4.316, m. of 3	Playfair and Joule. M. C. S. 2, 401.
" "	"	4.472, 4°	Playfair and Joule. J. C. S. 1, 137.
" "	"	4.581	Filhol. Ann. (3), 21, 415.
" "	"	4.41, 15°.5	Holker. P. M. (3), 27, 214.
" "	"	4.423	Schröder. P. A. 106, 226.
" "	"	4.429	
" "	"	4.509	
" "	"	4.235	Buignet. J. 14, 15.
" "	"	4.3, 0°	Diite. Ber. 15, 1438.
Manganese nitrate	$\text{Mn (N O}_3)_2 \cdot 6 \text{H}_2 \text{O}$	1.8199, 21°, s.	Ordway. J. 12, 113.
" "	"	1.8104, 21°, l.	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Nickel nitrate	$\text{Ni} (\text{N O}_3)_2, 6 \text{ H}_2 \text{ O}$	2.037, 22°	Laws. F. W. C.
" "	"	2.065, 14°	
Cobalt nitrate	$\text{Co} (\text{N O}_3)_2, 6 \text{ H}_2 \text{ O}$	1.83, 14°	Bodeker. B. D. Z.
Copper nitrate	$\text{Cu} (\text{N O}_3)_2, 3 \text{ H}_2 \text{ O}$	2.174	Hassenfratz. Ann.
" "	"	2.047, m. of 3	28, 3.
Didymium nitrate	$\text{Di} (\text{N O}_3)_3, 6 \text{ H}_2 \text{ O}$	2.245	Playfair and Joule.
" "	"	2.253	
Samarium nitrate	$\text{Sm} (\text{N O}_3)_3, 6 \text{ H}_2 \text{ O}$	2.370	M. C. S. 2, 401.
" "	"	2.380	Cleve. U. N. A. 1885.
Ferric nitrate	$\text{Fe}_2 (\text{N O}_3)_6, 18 \text{ H}_2 \text{ O}$	1.6835, 21°, s.	(Ordway. J. 12,
" "	"	1.6712, 1.	
Bismuth nitrate	$\text{Bi} (\text{N O}_3)_3, 5 \text{ H}_2 \text{ O}$	2.736, m. of 2	114.
" "	"	2.823, 13°	Playfair and Joule.
Uranyl nitrate	$\text{U O}_2 (\text{N O}_3)_2, 6 \text{ H}_2 \text{ O}$	2.807, 13°	M. C. S. 2, 401.
Gold hydrogen nitrate	$\text{Au H} (\text{N O}_3)_4, 3 \text{ H}_2 \text{ O}$	2.82	Laws. F. W. C.
" "	"	2.84	
			Bodeker. B. D. Z.
			Gumpach. See
			Schottlander,
			Wurzburg. In.
			Diss. 1884.

## 2d. Basic and Ammonio-Nitrates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dimercuric nitrate	$\text{Hg}_2 \text{ N}_2 \text{ O}_7, 2 \text{ H}_2 \text{ O}$	4.242	Playfair and Joule.
Mercurous subnitrate	$\text{Hg}_6 (\text{N O}_3)_4 \text{ O}, 3 \text{ H}_2 \text{ O}$	5.967	M. C. S. 2, 401.
Lead hydroxynitrate	$\text{Pb N O}_3 \text{ O H}$	5.93, 0°	" "
Diplumbic nitrate	$\text{Pb}_2 \text{ N}_2 \text{ O}_7$	5.945	Ditte. Ber. 15, 1138.
Tricupric nitrate	$\text{Cu}_3 \text{ N}_2 \text{ O}_6, \text{ H}_2 \text{ O}$	2.765, m. of 3	Playfair and Joule.
Tetracupric nitrate	$\text{Cu}_4 \text{ N}_2 \text{ O}_6, 3 \text{ H}_2 \text{ O}$	3.378	M. C. S. 2, 401.
" "	"	3.371	" "
Gerhardtite	"	3.426	Wells and Penfield.
Bismuth subnitrate	$\text{Bi}_2 \text{ N}_2 \text{ O}_6, \text{ H}_2 \text{ O}$	4.551	A. J. S. (3), 20, 50.
Bismuth hydroxynitrate	$\text{Bi} (\text{O H}_2 \text{ N O}_3)$	5.260, m. of 2	Playfair and Joule.
Mercury ammonionitrate	$\text{Hg}_2 \text{ N}_2 \text{ O}_6, 2 \text{ N H}_3$	5.970	M. C. S. 2, 401.
Copper ammonionitrate	$\text{Cu} (\text{N O}_3)_2, 4 \text{ N H}_3$	1.874, m. of 3	" "
" "	"	1.965, 21° 5	" "
Purpureocobalt chloronitrate.	$\text{Co}_2 (\text{NH}_3)_{10} \text{ Cl}_2 (\text{NO}_3)_4$	1.967, 16°	Evans. F. W. C.
Purpureocobalt bromonitrate.	$\text{Co}_2 (\text{NH}_3)_{10} \text{ Br}_2 (\text{NO}_3)_4$	1.956, 17° 1	Jorgensen. J. P. C.
Purpureochromium chloronitrate.	$\text{Cr}_2 (\text{NH}_3)_{10} \text{ Cl}_2 (\text{NO}_3)_4$	1.569, 17° 2	(2), 20, 105.
			Jorgensen. J. P. C.
			(2), 19, 49.
			(2), 20, 105.

## XXXI. HYPOPHOSPHITES AND PHOSPHITES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen hypophosphite, or hypophosphorous acid	$\text{H}_3 \text{P O}_2$ -----	1.493, 18°.8---	Thomsen. J. P. C. (2), 2, 160.
Barium hypophosphite---	$\text{Ba H}_4 \text{P}_2 \text{O}_4 \cdot \text{H}_2 \text{O}$ ---	2.8718, 10°	Mohr. F. W. C.
" "-----	" "-----	2.8971, 17°	
" "-----	" "-----	2.839 -----	Schröder. Ber. 11, 2130.
" "-----	" "-----	2.911 -----	
" "-----	" "-----	2.775, 23°.3	Nye. F. W. C.
" "-----	" "-----	2.780, 21°.6	
Magnesium hypophosphite	$\text{Mg H}_4 \text{P}_2 \text{O}_4 \cdot 6 \text{H}_2 \text{O}$ ---	1.5681, 14°.5	Mohr. F. W. C.
" "-----	" "-----	1.5886, 12°.5	
Zinc hypophosphite-----	$\text{Zn H}_4 \text{P}_2 \text{O}_4 \cdot 6 \text{H}_2 \text{O}$ ---	2.014, 19°.5	Nye. F. W. C.
" "-----	" "-----	2.016, 19°.2	
" "-----	" "-----	2.020, 20°	
Nickel hypophosphite-----	$\text{Ni H}_4 \text{P}_2 \text{O}_4 \cdot 6 \text{H}_2 \text{O}$ ---	1.824, 19°.8	" " "
" "-----	" "-----	1.844, 19°	
" "-----	" "-----	1.856, 18°	
Cobalt hypophosphite-----	$\text{Co H}_4 \text{P}_2 \text{O}_4 \cdot 6 \text{H}_2 \text{O}$ ---	1.808	" "
" "-----	" "-----	1.809 } 18°.5	
" "-----	" "-----	1.811 } 18°.5	
Hydrogen phosphite, or phosphorous acid.	$\text{H}_3 \text{P O}_3$ -----	1.651, 21°.2---	Thomsen. J. P. C. (2), 2, 160.

## XXXII. HYPOPHOSPHATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tetrasodium hypophosphate.	$\text{Na}_4 \text{P}_2 \text{O}_6 \cdot 10 \text{H}_2 \text{O}$ ---	1.832 -----	Dufet. C. R. 102, 1328.
" "-----	" "-----	1.8233 -----	Dufet. B. S. M. 10, 77.
Trisodium hypophosphate	$\text{Na}_3 \text{H P}_2 \text{O}_6 \cdot 9 \text{H}_2 \text{O}$ ---	1.7427 -----	" "
Disodium hypophosphate.	$\text{Na}_2 \text{H}_2 \text{P}_2 \text{O}_6 \cdot 6 \text{H}_2 \text{O}$ ---	1.8491 -----	" "
" "-----	" "-----	1.840 -----	Dufet. C. R. 102, 1328.

## XXXIII. PHOSPHATES.

## 1st. Normal Orthophosphates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen phosphate, or phosphoric acid.	$\text{H}_3\text{P O}_4$	1.88	Schiff. J. 12, 41.
"	"	1.884, 187.2	Thomson. J. P. C. (2), 2, 130.
Trisodium phosphate	$\text{Na}_3\text{P O}_4$	2.5111, 12°	C. A. Mohr. F. W. C.
"	"	2.5102, 17° 5	"
"	$\text{Na}_3\text{P O}_4 \cdot 12\text{H}_2\text{O}$	1.622	Playfair and Joule. M. C. S. 2, 401.
"	"	1.618	Schiff. A. C. P. 112, 88.
"	"	1.6645	Dufet. B. S. M. 10, 77.
Disodium hydrogen phosphate.	$\text{Na}_2\text{H P O}_4 \cdot 3\text{H}_2\text{O}$	1.848	Dufet. C. R. 102, 1328.
"	$\text{Na}_2\text{H P O}_4 \cdot 7\text{H}_2\text{O}$	1.6789	Dufet. B. S. M. 10, 77.
"	$\text{Na}_2\text{H P O}_4 \cdot 12\text{H}_2\text{O}$	1.5139	Tunmermann. See Bottger.
"	"	1.525, m. of 3	Playfair and Joule. M. C. S. 2, 401.
"	"	1.586, 8°	Kopp. J. 8, 45.
"	"	1.525	Schiff. A. C. P. 112, 88.
"	"	1.559	Buignet. J. 14, 15.
"	"	1.5235, 15°	Stolba. J. P. C. 97, 503.
"	"	1.535	W. C. Smith. Am. J. P. 53, 148.
"	"	1.5313	Dufet. B. S. M. 10, 77.
Sodium dihydrogen phosphate.	$\text{Na H}_2\text{P O}_4 \cdot \text{H}_2\text{O}$	2.049	Schiff. A. C. P. 112, 88.
"	"	2.0547	Dufet. B. S. M. 10, 77.
"	$\text{Na H}_2\text{P O}_4 \cdot 2\text{H}_2\text{O}$	1.915	Joly and Dufet. C. R. 102, 1393.
"	"	1.9096	Dufet. B. S. M. 10, 77.
Potassium dihydrogen phosphate.	$\text{K H}_2\text{P O}_4$	2.238	Schiff. A. C. P. 112, 88.
"	"	2.403	Buignet. J. 14, 15.
"	"	2.321	"
"	"	2.323	"
"	"	2.343	Schroder. Dm. 1873.
"	"	2.380	"
Diammonium hydrogen phosphate.	$\text{Am}_2\text{H P O}_4$	1.619	Schiff. A. C. P. 112, 88.
"	"	1.678	Buignet. J. 14, 15.
Ammonium dihydrogen phosphate.	$\text{Am H}_2\text{P O}_4$	1.758	Schiff. A. C. P. 112, 88.
"	"	1.700	Schroder. Dm. 1873.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.	
Ammonium dihydrogen phosphate.	Am H <sub>2</sub> P O <sub>4</sub> -----	1.779 -----	Schröder. Ber. 7, 677.	
Sodium potassium hydrogen phosphate.	Na K H P O <sub>4</sub> . 7 H <sub>2</sub> O	1.671 -----	Schiff. A. C. P. 112, 88.	
Sodium ammonium hydrogen phosphate.	Na Am H P O <sub>4</sub> . 4 H <sub>2</sub> O	1.554 -----	" "	
Trisilver phosphate-----	Ag <sub>3</sub> P O <sub>4</sub> -----	7.321 -----	Stromeyer. See Böttger.	
Thallium dihydrogen phosphate.	Tl H <sub>2</sub> P O <sub>4</sub> -----	4.723 -----	Lamy and Des Cloizeaux. Nature 1, 116.	
Trithallium phosphate-----	Tl <sub>3</sub> P O <sub>4</sub> -----	6.89, 10° -----	Lamy. J. 18, 247.	
Bobierite-----	Mg <sub>3</sub> (P O <sub>4</sub> ) <sub>2</sub> . 8 H <sub>2</sub> O	2.41 -----	Lacroix. C. R. 106, 632.	
Magnesium hydrogen phosphate.	Mg H P O <sub>4</sub> . H <sub>2</sub> O-----	2.326, 15° -----	Schulten. C. R. 100, 877.	
Struvite-----	Am Mg P O <sub>4</sub> . 6 H <sub>2</sub> O	1.65 -----	Teschmacher. P. M. (3), 28, 548.	
Hannayite-----	Am <sub>3</sub> Mg <sub>3</sub> H <sub>3</sub> (P O <sub>4</sub> ) <sub>4</sub> . 8 H <sub>2</sub> O	1.893 -----	v. Rath. B. S. M. 2, 80.	
Hopeite-----	Zn <sub>3</sub> (P O <sub>4</sub> ) <sub>2</sub> . 4 H <sub>2</sub> O	2.76—2.85-----	Dana's Mineralogy.	
Brushite-----	Ca H P O <sub>4</sub> . 2 H <sub>2</sub> O-----	2.208 -----	Moore. A. J. S. (2), 39, 43.	
Metabrushite-----	2 Ca H P O <sub>4</sub> . 3 H <sub>2</sub> O-----	2.288 -----	} 15°.5 {	Julien. A. J. S. (2), 40, 371.
"-----	"-----	2.356 -----		
"-----	"-----	2.362 -----		
Martinite-----	Ca <sub>10</sub> H <sub>4</sub> (P O <sub>4</sub> ) <sub>8</sub> . H <sub>2</sub> O	2.892—2.896-----	Kloos. J. C. S. 54, 233.	
Reddingite-----	Mn <sub>3</sub> (P O <sub>4</sub> ) <sub>2</sub> . 3 H <sub>2</sub> O-----	3.102 -----	Brush and Dana. A. J. S. (3), 16, 120.	
Vivianite-----	Fe <sub>3</sub> (P O <sub>4</sub> ) <sub>2</sub> . 8 H <sub>2</sub> O-----	2.58, 15° -----	Rammelsberg. P. A. 64, 411.	
"-----	"-----	2.680 -----	Rammelsberg. J. P. C. 86, 344.	
Lithiophilite-----	Mn Li P O <sub>4</sub> -----	3.482 -----	Brush and Dana. A. J. S. (3), 18, 45.	
Triphylite-----	Fe Li P O <sub>4</sub> -----	3.6 -----	Fuchs. B. J. 15, 211.	
"-----	"-----	3.534—3.589-----	Penfield. A. J. S. (3), 17, 226.	
Hureaulite-----	Mn <sub>10</sub> Fe <sub>2</sub> H <sub>3</sub> (P O <sub>4</sub> ) <sub>5</sub> . 5 H <sub>2</sub> O	3.185—3.198-----	Des Cloizeaux. Ann. (3), 53, 300.	
Fairfieldite-----	MnCa <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> . 2H <sub>2</sub> O-----	3.15 -----	Brush and Dana. A. J. S. (3), 17, 359.	
Dickinsonite-----	NaCaFeMn <sub>2</sub> (P O <sub>4</sub> ) <sub>3</sub> . H <sub>2</sub> O	3.338 -----	} Brush and Dana. A. J. S. (3), 16, 114.	
"-----	"-----	3.343 -----		
Fillowite-----	Na <sub>2</sub> CaFeMn <sub>6</sub> (P O <sub>4</sub> ) <sub>6</sub> . H <sub>2</sub> O	3.43 -----	Brush and Dana. A. J. S. (3), 17, 363.	
Strengite-----	Fe''' P O <sub>4</sub> . 2 H <sub>2</sub> O-----	2.87 -----	Nies. Z. K. M. 1, 94.	
" Artificial-----	"-----	2.74 -----	Schulten. Z. K. M. 12, 640.	
Koninekite-----	Fe''' P O <sub>4</sub> . 3 H <sub>2</sub> O-----	2.3 -----	Cesaro. A. J. S. (3), 29, 342.	
Aluminum phosphate. Cryst.	Al P O <sub>4</sub> -----	2.59 -----	Schulten. C. R. 98, 1584.	
Berlinite-----	4 Al P O <sub>4</sub> . H <sub>2</sub> O-----	2.64 -----	Blomstrand. Dana's Min.	
Callainite. (Variscite?)-----	2 Al P O <sub>4</sub> . 5 H <sub>2</sub> O-----	2.50 -----	} Damour. C. R. 59, 936.	
"-----	"-----	2.52 -----		

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Variscite-----	$\text{Al P O}_4 \cdot 2 \text{ H}_2 \text{ O}$ -----	2.408, 18°-----	Petersen. N. J. 1871, 357.
Zepharovichite-----	$\text{Al P O}_4 \cdot 3 \text{ H}_2 \text{ O}$ -----	2.384-----	Boricky. J. 22, 1235.
Xenotime-----	$\text{Y P O}_4$ -----	4.54-----	Smith. J. 7, 857.
"-----	"-----	4.45 }-----	Zschau. J. 8, 966.
"-----	"-----	4.51 }-----	
"-----	"-----	4.39-----	Damour. J. 10, 686.
Cerium phosphate-----	$\text{Ce P O}_4$ -----	5.22, 14°-----	Grandeau. Ann. (6), 8, 193.
Cryptolite-----	"-----	4.6-----	Wohler. P. A. 67, 424.
"-----	"-----	4.78-----	Watts. J. 2, 773.
Rhabdophane (Scovillite)-----	$2 (\text{La Di Y Er}) \text{ P O}_4 \cdot \text{H}_2 \text{ O}$ -----	3.9—4.01-----	Brush and Penfield. A. J. S. (3), 25, 459.
Monazite-----	$(\text{Ce La Di}) \text{ P O}_4$ -----	5.203-----	Genth. Dana's Min.
"-----	"-----	5.174-----	Rammelsberg. J. 30, 1298.
"-----	"-----	5.106—5.110-----	Kokscharow. J. 15, 762.
"-----	"-----	5.174-----	Rammelsberg. Z. G. S. 29, 79.
Didymium phosphate-----	$\text{Di P O}_4$ -----	5.34, 15°-----	Grandeau. Ann. (6), 8, 193.
Samarium phosphate-----	$\text{Sm P O}_4$ -----	5.826 }-----	Cleve. U. S. A. 1885.
"-----	"-----	5.830 }-----	
Autunite-----	$\text{Ca (U O}_2)_2 (\text{P O}_4)_2 \cdot 8 \text{ H}_2 \text{ O}$ -----	3.05—3.19-----	Dana's Mineralogy.
Torbernite-----	$\text{Cu (U O}_2)_2 (\text{P O}_4)_2 \cdot 8 \text{ H}_2 \text{ O}$ -----	3.4—3.6-----	" "
Franciscite-----	$\text{Ba (U O}_2)_2 (\text{P O}_4)_2 \cdot 8 \text{ H}_2 \text{ O}$ -----	3.53-----	Weibach. J. 30, 1303.
Sodium zirconium phosphate,-----	$\text{Na}_4 \text{ Zr (P O}_4)_4$ -----	2.43, 14°-----	Troost and Ouvrard. C. R. 105, 30.
" "-----	$\text{Na}_{12} \text{ Zr}_3 (\text{P O}_4)_4$ -----	2.88, 14°-----	" "
" "-----	$\text{Na}_4 \text{ Zr}_2 (\text{P O}_4)_3$ -----	3.10, 12°-----	" "
Potassium zirconium phosphate,-----	$\text{K}_2 \text{ Zr (P O}_4)_2$ -----	3.076, 7°-----	Troost and Ouvrard. C. R. 102, 1422.
" "-----	$\text{K Zr}_2 (\text{P O}_4)_3$ -----	3.18, 12°-----	" "
Sodium thorium phosphate,-----	$\text{Na}_5 \text{ Th (P O}_4)_3$ -----	3.843, 7°-----	Troost and Ouvrard. C. R. 105, 30.
" "-----	$\text{Na Th}_2 (\text{P O}_4)_3$ -----	5.62, 16°-----	" "
Potassium thorium phosphate,-----	$\text{K}_{12} \text{ Th}_3 (\text{P O}_4)_8$ -----	3.95, 12°-----	Troost and Ouvrard. C. R. 102, 1422.
" "-----	$\text{K}_5 \text{ Th (P O}_4)_2$ -----	4.688, 7°-----	" "
" "-----	$\text{K Th}_2 (\text{P O}_4)_3$ -----	5.75, 12°-----	" "

## 2d. Basic Orthophosphates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isoclasite -----	$\text{Ca}_2(\text{OH})\text{PO}_4 \cdot 2\text{H}_2\text{O}$	2.92 -----	Sandberger. J. P. C. (2), 2, 125.
Libethenite -----	$\text{Cu}_2(\text{O H})\text{P O}_4$	3.6—3.8 -----	Hermann. J. P. C. 37, 175.
Tagilite -----	$\text{Cu}_2(\text{O H})\text{P O}_4 \cdot \text{H}_2\text{O}$	3.50 -----	Hermann. J. P. C. 37, 184.
“ -----	“ -----	4.076 -----	Breithaupt. B. H. Ztg. 24, 309.
Veszelyite -----	$\text{Cu}_2(\text{OH})\text{PO}_4 \cdot 2\text{H}_2\text{O}$	3.531 -----	Schrauf. Z. K. M. 4, 31.
Pseudomalachite -----	$\text{Cu}_3(\text{O H})_3\text{P O}_4$	4.175 -----	Schrauf. Z. K. M. 4, 14.
Ehlite -----	$\text{Cu}_5(\text{OH})_4(\text{PO}_4)_2 \cdot \text{H}_2\text{O}$	4.102 -----	Schrauf. Z. K. M. 4, 13.
Dihydrate -----	$\text{Cu}_5(\text{O H})_4(\text{P O}_4)_2$	4.309 -----	Schrauf. Z. K. M. 4, 12.
Triploidite -----	$(\text{Mn Fe})_2(\text{O H})\text{P O}_4$	3.697 -----	Brush and Dana. A. J. S. (3), 16, 42.
Ludlamite -----	$\text{Fe}_7(\text{O H})_2(\text{P O}_4)_4 \cdot 8\text{H}_2\text{O}$	3.12 -----	Maskelyne and Field. J. 30, 1300.
Picite -----	$\text{Fe}_{14}(\text{O H})_{18}(\text{P O}_4)_8 \cdot 27\text{H}_2\text{O}$	2.83 -----	Streng. J. 34, 1377.
Dufrenoyite -----	$\text{Fe}'''_2(\text{O H})_3\text{P O}_4$	3.227 -----	Dufrenoy. Dana's Min.
“ -----	“ -----	3.382 -----	Campbell. A. J. S. (3), 22, 65.
“ -----	“ -----	3.454 -----	Massie. J. 33, 1433.
“ -----	“ -----	3.293 -----	Boricky. S. W. A. 56 (1), 7.
Cacoxenite -----	$\text{Fe}'''_4(\text{O H})_6(\text{P O}_4)_2 \cdot 9\text{H}_2\text{O}$	3.38 -----	Dana's Mineralogy.
Calcioferrite -----	$\text{Fe}'''_3\text{Ca}_3(\text{O H})_3(\text{P O}_4)_4 \cdot 8\text{H}_2\text{O}$	2.523 } -----	Reissig. Dana's Min.
“ -----	“ -----	2.529 } -----	
Borickite -----	$\text{Fe}'''_5\text{Ca}(\text{O H})_{11}(\text{P O}_4)_2 \cdot 3\text{H}_2\text{O}$	2.696—2.707 -----	Boricky. J. 20, 1002.
Chalcosiderite -----	$\text{Fe}'''_6\text{Cu}(\text{O H})_8(\text{P O}_4)_4 \cdot 4\text{H}_2\text{O}$	3.108 -----	Maskelyne. J. C. S. 28, 586.
Andrewsite -----	$\text{Fe}'''_8\text{CuFe}''_4(\text{P O}_4)_3(\text{O H})_6$	3.475 -----	“ “
Evansite -----	$\text{Al}_3(\text{OH})_6\text{P O}_4 \cdot 6\text{H}_2\text{O}$	1.939 -----	Forbes. P. M. (4), 28, 341.
Trolleite -----	$\text{Al}_4(\text{O H})_3(\text{P O}_4)_3$	3.10 -----	Blomstrand. Dana's Min.
Augelite -----	$\text{Al}_4(\text{O H})_6(\text{P O}_4)_2$	2.77 -----	“ “
Turquoise -----	$\text{Al}_4(\text{O H})_6(\text{P O}_4)_2 \cdot \text{H}_2\text{O}$	2.621 -----	Hermann. J. P. C. 33, 282.
“ -----	“ -----	2.426—2.651 -----	Blake. J. 11, 722.
Peganite -----	$\text{Al}_4(\text{O H})_6(\text{P O}_4)_2 \cdot 3\text{H}_2\text{O}$	2.492—2.496 -----	Breithaupt. Schw. J. 60, 308.
Fischerite -----	$\text{Al}_4(\text{O H})_6(\text{P O}_4)_2 \cdot 5\text{H}_2\text{O}$	2.46 -----	Hermann. J. P. C. 33, 286.
Cæruleolactite -----	$\text{Al}_6(\text{O H})_6(\text{P O}_4)_4 \cdot 7\text{H}_2\text{O}$	2.552, 19° } ----- 2.593, 18° } -----	Petersen. N. J. 1871, 353.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Wavellite	$\text{Al}_6 (\text{O} \cdot \text{H})_6 (\text{P} \cdot \text{O}_4)_4$ $9 \text{H}_2\text{O}.$	2.337	Haidinger. Dana's Min.
"	"	2.316	Richardson. Dana's Min.
Planerite	$\text{Al}_6 (\text{O} \cdot \text{H})_6 (\text{P} \cdot \text{O}_4)_4$ $12 \text{H}_2\text{O}.$	2.65	Hermann. J. 15, 764.
Sphurite	$\text{Al}_{10} (\text{O} \cdot \text{H})_{18} (\text{P} \cdot \text{O}_4)_6$ $7 \text{H}_2\text{O}.$	2.536	Zepharovich. S. W. A. 56, 24.
Lazulite	$\text{Al}_2 \text{Mg} (\text{OH})_2 (\text{PO}_4)_2$	3.122	Smith and Brush. J. 6, 840.
"	"	3.106—3.123	Rammelsberg. P. A. 64, 261.
"	"	3.108	Chapman. J. 14, 1033.
Cirrolite	$\text{Al}_2 \text{Ca}_3 (\text{OH})_2 (\text{PO}_4)_4$	3.08	Blomstrand. Dana's Min.
Plumbogummite	$\text{Al}_4 \text{Pb} (\text{OH})_2 (\text{PO}_4)_2$ $5 \text{H}_2\text{O}.$	4.88, 157.6	Dufrenoy. Ann. (2), 59, 440.
" Hitecockite	"	4.914, 20°	Genth. A. J. S. (2), 23, 424.
Eosphorite	$\text{Al} \text{Mn} (\text{OH})_2 (\text{PO}_4)$ $\text{H}_2\text{O}.$	3.124	Brush and Dana. A. J. S. (3), 16, 35.
"	"	3.134	
"	"	3.145	
Childrenite	$\text{Al} \text{Fe} (\text{O} \cdot \text{H})_2 (\text{P} \cdot \text{O}_4)$ $\text{H}_2\text{O}.$	3.22	Church. J. C. S. 26, 104.
Barrandite	$\text{Al} \text{Fe}'' (\text{P} \cdot \text{O}_4)_2$ $4 \text{H}_2\text{O}.$	2.576	Zepharovich. J. 20, 1000.

## 3d. Meta- and Pyrophosphates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium metaphosphate	$\text{Na} \text{P} \cdot \text{O}_3$	2.4756, 19°; 5	Mohr. F. W. C.
"	"	2.4769, 18°	
"	"	2.503, 20°	
Potassium metaphosphate	$\text{K} \text{P} \cdot \text{O}_3$	2.2513	Mohr. F. W. C.
"	"	2.2639	
"	"	14°; 5	
Didymium metaphosphate	$\text{Di} \text{P}_2 \cdot \text{O}_5$	3.333	Cleve. U. S. A. 1885.
"	"	3.358	
"	"	18°; 4	
Samarium metaphosphate	$\text{Sm} \text{P}_2 \cdot \text{O}_5$	3.485	" "
"	"	28°; 8	
"	"	3.489	
Thorium metaphosphate	$\text{Th} \text{P}_2 \cdot \text{O}_5$	4.08, 16°; 4	Troost. C. R. 101, 210.
Sodium pyrophosphate	$\text{Na}_2 \text{P}_2 \cdot \text{O}_5$	2.534	Schroder. Dm. 1873.
"	"	2.5613	Mohr. F. W. C.
"	"	17°	
"	"	2.5851	
"	$\text{Na}_4 \text{P}_2 \cdot \text{O}_5 \cdot 10 \text{H}_2\text{O}.$	1.836	Playfair and Joule. M. C. S. 2, 401.
"	"	1.7726, 21°	Mohr. F. W. C.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium pyrophosphate---	$\text{Na}_4 \text{P}_2 \text{O}_7 \cdot 10 \text{H}_2 \text{O}$ ---	1.824 -----	Dufet. C. R. 102, 1328.
“ “ ---	“ ---	1.8151 -----	Dufet. B. S. M. 10, 77.
Sodium hydrogen pyrophosphate.	$\text{Na}_2 \text{H}_2 \text{P}_2 \text{O}_7 \cdot 6 \text{H}_2 \text{O}$	1.8616 -----	“ “
Potassium pyrophosphate---	$\text{K}_4 \text{P}_2 \text{O}_7$ -----	2.33 -----	Brügelmann. Ber. 17, 2359.
Silver pyrophosphate ---	$\text{Ag}_4 \text{P}_2 \text{O}_7$ -----	5.306 -----	Stromeyer. See Böttger.
“ “ ---	“ -----	5.2566 -----	Tünnermann. See Böttger.
Thallium pyrophosphate---	$\text{Tl}_4 \text{P}_2 \text{O}_7$ -----	6.786 -----	Lamy and Des Cloizeaux. Nature 1, 116.
Magnesium pyrophosphate	$\text{Mg}_2 \text{P}_2 \text{O}_7$ -----	2.220 -----	Schröder. Dm. 1873.
“ “ ---	“ -----	2.559, 18° } -----	Lewis. F. W. C.
“ “ ---	“ -----	2.598, 22° } -----	
Zinc pyrophosphate---	$\text{Zn}_2 \text{P}_2 \text{O}_7$ -----	3.7538 } -----	“ “
“ “ ---	“ -----	3.7574 } 23° -----	
Manganese pyrophosphate	$\text{Mn}_2 \text{P}_2 \text{O}_7$ -----	3.5742, 26° } -----	“ “
“ “ ---	“ -----	3.5847, 20° } -----	
Nickel pyrophosphate---	$\text{Ni}_2 \text{P}_2 \text{O}_7$ -----	3.9064, 27° } -----	“ “
“ “ ---	“ -----	3.9303, 25° } -----	
Cobalt pyrophosphate---	$\text{Co}_2 \text{P}_2 \text{O}_7$ -----	3.710, 25° } -----	“ “
“ “ ---	“ -----	3.746, 23° } -----	
Barium pyrophosphate---	$\text{Ba}_2 \text{P}_2 \text{O}_7 \cdot \text{H}_2 \text{O}$ ---	3.574 } -----	Schröder. Dm. 1873.
“ “ ---	“ -----	3.582 } -----	
“ “ ---	“ -----	3.590 } -----	
Silicon pyrophosphate---	$\text{Si P}_2 \text{O}_7$ -----	3.1, 14° -----	Hautefeuille and Margottet. C. R. 96, 1053.
Zirconium pyrophosphate	$\text{Zr P}_2 \text{O}_7$ -----	3.12 -----	Knop. A. C. P. 159, 48.
“ “ ---	“ -----	3.14 -----	
Tin pyrophosphate ---	$\text{Sn P}_2 \text{O}_7$ -----	3.61 -----	Knop. A. C. P. 159, 39.
Basic tin pyrophosphate---	$\text{Sn}_2 (\text{P}_2 \text{O}_7) \text{O}_2$ -----	3.87 } -----	“ “
“ “ ---	“ -----	3.98 } -----	
Basic titanium pyrophosphate.	$\text{Ti}_3 (\text{P}_2 \text{O}_7) \text{O}_4$ -----	2.9 -----	Knop. A. C. P. 157, 365.

## XXXIV. VANADATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium octovanadate	$\text{Na}_{12}\text{V}_8\text{O}_{26} \cdot 4\text{H}_2\text{O}$	2.85, 18°	Carmichael, J. C. S. (2), 11, 323.
Silver octovanadate	$\text{Ag}_{12}\text{V}_8\text{O}_{26}$	5.67, 18°	" "
Thallium metavanadate	$\text{Tl}_4\text{V}_2\text{O}_7$	6.019, 11°	" "
Thallium pyrovanadate	$\text{Tl}_4\text{V}_2\text{O}_7$	8.21, 18°-5. )	" "
" "	"	8.812, 18°-5. ) ppt. fused.	" "
Thallium orthovanadate	$\text{Tl}_4\text{V}_4\text{O}_{11}$	8.6, 17°	" "
Thallium octovanadate	$\text{Tl}_{12}\text{V}_8\text{O}_{26}$	8.59, 17°-5. )	" "
Thallium decavanadate	$\text{Tl}_{12}\text{V}_{10}\text{O}_{31}$	7.86, 17°	" "
Magnesium vanadate.	$\text{Mg}_3\text{V}_{10}\text{O}_{28} \cdot 28\text{H}_2\text{O}$	2.196, 18°	" "
" " Brown.	"	2.167 )	Sugiura and Baker, J. C. S. 35, 716.
" " Red	"	5.91	Frenzel, J. P. C. (2), 4, 227.
Pucherite	$\text{Bi}_2\text{V}_2\text{O}_7$	5.91	Bergemann, J. 3, 753.
Dechenite	$\text{Pb}_3\text{V}_2\text{O}_5 \cdot \text{Zn}_3\text{V}_2\text{O}_5$	5.81	Tschermak, J. 14, 1021.
" " Eu-synchite	"	5.83	" "
" " Eu-synchite	"	5.796	Rammelsberg, (3), 26, 361.
Descloizite	$\text{Pb}_2\text{Zn}(\text{O} \cdot \text{H})\text{V}_2\text{O}_7$	5.839	Damour, J. 7, 855.
" "	"	5.915	(From two samples, Rammelsberg, J. 33, 1428.
" "	"	6.080	" "
" "	"	6.200	Pentfield, A. J. S. (3), 26, 361.
" "	"	6.205	" "
" " Light	"	6.105—6.108	Genth, Am. Phil. Soc. 1885.
" " Dark	"	5.814—5.882	" "
Mottramite†	$\text{Pb}_2\text{Cu}(\text{O} \cdot \text{H})\text{V}_2\text{O}_7$	5.894	Roscoe, J. 29, 1259.
Volborthite‡	$\text{R}_2(\text{O} \cdot \text{H})_2\text{VO}_6 \cdot 6\text{H}_2\text{O}$	3.55	Credner, D. 2, 13 Min.
Didymium vanadate	$\text{Di}_2\text{V}_2\text{O}_7$	4.959 ) 4.963 )	21.42
" "	"	2.492 ) 2.497 )	18°-5
Didymium metavanadate	$\text{Di}_2\text{V}_2\text{O}_7 \cdot 14\text{H}_2\text{O}$	2.492 ) 2.497 )	" "
Samarium metavanadate	$\text{Sm}_2\text{V}_2\text{O}_7 \cdot 12\text{H}_2\text{O}$	2.628, 17°-5 )	" "
" "	"	2.620, 17°-8 )	" "
" "	$\text{Sm}_2\text{V}_2\text{O}_7 \cdot 14\text{H}_2\text{O}$	2.522, 17°-5 )	" "
" "	"	2.526, 17°-8 )	" "
Sodium vanadium vanadate.	$2\text{Na}_2\text{O} \cdot 2\text{V}_2\text{O}_5 \cdot \text{V}_2\text{O}_5 \cdot 6\text{H}_2\text{O}$	1.389, 15°	Brierly, J. C. S. 19, 30.
" " " "	$2\text{Na}_2\text{O} \cdot 2\text{V}_2\text{O}_5 \cdot \text{V}_2\text{O}_5 \cdot 13\text{H}_2\text{O}$	1.327, 15	" "
Potassium vanadium vanadate.	$5\text{K}_2\text{O} \cdot 2\text{V}_2\text{O}_5 \cdot 4\text{V}_2\text{O}_5 \cdot \text{H}_2\text{O}$	1.213, 15	" "
Ammonium vanadium vanadate.	$3\text{Am}_2\text{O}_3 \cdot 2\text{V}_2\text{O}_5 \cdot 4\text{V}_2\text{O}_5 \cdot 6\text{H}_2\text{O}$	1.335, 15	" "

\* Pentfield's mineral contained some copper and arsenic. Frenzel's tritochlorite (3, 625) is similar.

† E. rimul somewhat doubtful.

‡ R in this formula =  $\frac{1}{2}\text{Cu}$  and  $\frac{1}{4}\text{Cu} + \text{Ba}$ .

## XXXV. ARSENITES AND ARSENATES.

## 1st. Normal Orthoarsenates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium dihydrogen arsenate.	$\text{Na H}_2 \text{As O}_4 \cdot \text{H}_2 \text{O}$	2.535 -----	Schiff. A. C. P. 112, 88.
“ “ “	“	2.6700 -----	Dufet. B. S. M. 10, 77.
“ “ “	$\text{Na H}_2 \text{As O}_4 \cdot 2 \text{H}_2 \text{O}$	2.320 -----	Joly and Dufet. C. R. 102, 1393.
“ “ “	“	2.3093 -----	Dufet. B. S. M. 10, 77.
Disodium hydrogen arsenate.	$\text{Na}_2 \text{H As O}_4 \cdot 7 \text{H}_2 \text{O}$	1.871 -----	Schiff. A. C. P. 112, 88.
“ “ “	“	1.8825 -----	Dufet. B. S. M. 10, 77.
“ “ “	$\text{Na}_2 \text{H As O}_4 \cdot 12 \text{H}_2 \text{O}$	1.759 -----	Thomson. See Böttger.
“ “ “	“	1.736 -----	Playfair and Joule. M. C. S. 2, 401.
“ “ “	“	1.670 -----	Schiff. A. C. P. 112, 88.
“ “ “	“	1.6675 -----	Dufet. B. S. M. 10, 77.
Trisodium arsenate	$\text{Na}_3 \text{As O}_4$	2.8128 -----	} 21° Stallo. F. W. C.
“ “	“	2.8577 -----	
“ “	$\text{Na}_3 \text{As O}_4 \cdot 12 \text{H}_2 \text{O}$	1.804 -----	Playfair and Joule. M. C. S. 2, 401.
“ “	“	1.762 -----	Schiff. A. C. P. 112, 88.
“ “	“	1.7593 -----	Dufet. B. S. M. 10, 77.
Potassium dihydrogen arsenate.	$\text{K H}_2 \text{As O}_4$	2.638 -----	Thomson. See Böttger.
“ “ “	“	2.832 -----	Schiff. A. C. P. 112, 88.
“ “ “	“	2.844 -----	} Schröder. Dm. 1873.
“ “ “	“	2.853 -----	
“ “ “	“	2.855 -----	
“ “ “	“	2.862 -----	Topsoë. B. S. C. 19, 246.
Ammonium dihydrogen arsenate.	$\text{Am H}_2 \text{As O}_4$	2.249 -----	Schiff. A. C. P. 112, 88.
“ “ “	“	2.299 -----	} Schröder. Dm. 1873.
“ “ “	“	2.309 -----	
“ “ “	“	2.312 -----	
“ “ “	“	2.308 -----	Topsoë. C. C. 4, 76.
Diammonium hydrogen arsenate.	$\text{Am}_2 \text{H As O}_4$	1.989 -----	Schiff. A. C. P. 112, 88.
Potassium sodium hydrogen arsenate.	$\text{K Na H As O}_4 \cdot 7 \text{H}_2 \text{O}$	1.884 -----	Schiff. A. C. P. 112, 88.
Ammonium sodium hydrogen arsenate.	$\text{Am Na H As O}_4 \cdot 4 \text{H}_2 \text{O}$	1.838 -----	“ “
Hoernesite	$\text{Mg}_3 (\text{As O}_4)_2 \cdot 8 \text{H}_2 \text{O}$	2.474 -----	Haidinger. J. 13, 784.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Magnesium hydrogen arsenate.	$(\text{H Mg As O}_4)_2 \cdot \text{H}_2\text{O}$	3.155, 15°	Schulten. C. R. 100, 877.
Kottigite	$\text{Zn}_3 (\text{As O}_4)_2 \cdot 8 \text{H}_2\text{O}$	3.1	Kottig. J. 2, 771.
Native nickel arsenate	$\text{Ni}_3 (\text{As O}_4)_2$	4.982	Bergemann. J. 11, 728.
Erythrite	$\text{Co}_3 (\text{As O}_4)_2 \cdot 8 \text{H}_2\text{O}$	2.918	Dana's Mineralogy.
Cabrerite	$(\text{Ni Co Mg})_3 (\text{As O}_4)_2 \cdot 8 \text{H}_2\text{O}$	2.96	Ferber. B. H. Ztg. 22, 306.
Roselite	$(\text{Ca Co Mg})_3 (\text{As O}_4)_2 \cdot 2 \text{H}_2\text{O}$	3.5—3.6	Schrauf. N. J. 1874, 870.
"	"	3.46, 3°	Weisbach. N. J. 1874, 871.
Caryinite	$(\text{Pb Mn Ca})_3 (\text{As O}_4)_2$	4.25	Lundstrom. Dana's Min., 2d App.
Berzelite	$\text{Mg}_3 \text{Ca}_3 (\text{As O}_4)_4$	2.52	Dana's Mineralogy.
Haidingerite	$\text{H Ca As O}_4 \cdot \text{H}_2\text{O}$	2.848	Turner. Dana's Min.
Pharmacolite	$2 \text{H Ca As O}_4 \cdot 5 \text{H}_2\text{O}$	2.64—2.73	Dana's Mineralogy.
Wappelerite	$\text{H (Ca Mg) As O}_4 \cdot 7 \text{H}_2\text{O}$	2.48	Frenzel. Dana's Min., 2d App.
Forbesite	$2 \text{H (Co Ni) As O}_4 \cdot 7 \text{H}_2\text{O}$	3.086	Forbes. P. M. 4, 25, 103.
Scorodite	$\text{Fe}^{+++} \text{As O}_4 \cdot 2 \text{H}_2\text{O}$	3.11	Damour. Ann. (3), 10, 406.
"	"	3.18	"
" Artificial	"	3.28	Verneuil and Bourgeois. C. R. 90, 224.
Carminite	$\text{Pb}_3 \text{Fe}^{+++}_{10} (\text{As O}_4)_{12}$	4.105	Dana's Mineralogy.
Trogerite	$(\text{U O}_2)_3 (\text{As O}_4)_2 \cdot 12 \text{H}_2\text{O}$	3.23	Weisbach. N. J. 1873, 316.
Uranospinite	$(\text{U O}_2)_2 \text{Ca (As O}_4)_2 \cdot 8 \text{H}_2\text{O}$	3.45	" "
Zemmerite	$(\text{U O}_2)_2 \text{Cu (As O}_4)_2 \cdot 8 \text{H}_2\text{O}$	3.53	" "

## 2d. Basic Orthoarsenates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Adamite	$\text{Zn}_2 (\text{O H) As O}_4$	4.338, 18°	Friedel. C. R. 62, 632.
Native nickel arsenate	$\text{Ni}_3 \text{O}_2 (\text{As O}_4)_2$	4.838	Bergemann. J. 11, 728.
Olivenite	$\text{Cu}_2 (\text{O H) As O}_4$	4.378	Damour. Ann. (3), 13, 404.
"	"	4.135	Hermann. J. P. C. 33, 261.
Clinoclaseite	$\text{Cu}_3 (\text{O H})_3 \text{As O}_4$	4.19—4.36	Dana's Mineralogy.
"	"	4.312	Damour. Ann. (3), 13, 404.
"	"	4.38, 19°	Hillebrand. Private communication.
Euclroite	$\text{Cu}_2 \text{OH (As O}_4)_2 \cdot \text{H}_2\text{O}$	3.389	Dana's Mineralogy.
Erinite	$\text{Cu}_3 (\text{O H})_4 (\text{As O}_4)_2$	4.043	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cornwallite -----	$\text{Cu}_5 (\text{O H})_4 (\text{As O}_4)_2$ $\text{H}_2 \text{O}$	4.160 -----	Dana's Mineralogy.
Tyrolite -----	$\text{Cu}_5 (\text{O H})_4 (\text{As O}_4)_2$ $7 \text{H}_2 \text{O}$	3.02—3.098 ---	" "
" -----	"	3.162 -----	Church. J. C. S. 26, 108.
" -----	"	3.27, 20°.5 ---	Hillebrand. Private communication.
Chalcophyllite -----	$\text{Cu}_8 (\text{O H})_{10} (\text{As O}_4)_2$ $7 \text{H}_2 \text{O}$	2.659 -----	Damour. Ann. (3), 13, 404.
" -----	"	2.435 -----	Hermann. J. P. C. 33, 294.
Conichalcite -----	$\text{Cu Ca (O H) As O}_4$	4.123 -----	Fritzsche. J. 2, 772.
Bayldonite -----	$\text{Cu}_3 \text{Pb (OH)}_2 (\text{As O}_4)_2$ $\text{H}_2 \text{O}$	5.35 -----	Church. J. C. S. 18, 265.
Liroconite -----	$\text{Cu}_2 \text{Al (O H)}_4 \text{As O}_4$ $4 \text{H}_2 \text{O}$	2.926 -----	Haidinger. Dana's Min.
" -----	"	2.964 -----	Damour. Ann. (3), 13, 404.
" -----	"	2.985 -----	Hermann. J. P. C. 33, 296.
Chenevixite -----	$\text{Cu}_3 \text{Fe}'''_2 (\text{O H})_6$ $(\text{As O}_4)_2$	3.93 -----	Pisani. C. R. 62, 690.
Pharmacosiderite -----	$\text{Fe}'''_4 (\text{O H})_3 (\text{As O}_4)_3$	2.9—3.0 -----	Dana's Mineralogy.
Arsenosiderite -----	$\text{Fe}'''_4 \text{Cu}_3 (\text{O H})_9$ $(\text{As O}_4)_3$	3.520 -----	Dufrenoy.
" -----	"	3.88 -----	Rammelsberg.
" -----	"	3.36 -----	Church. J. C. S. 26, 102.
Allaktite -----	$\text{Mn}_7 (\text{O H})_8 (\text{As O}_4)_2$	3.83—3.85 -----	Sjögren. A. J. S. (3), 27, 494.
Rhagite -----	$\text{Bi}_5 (\text{O H})_9 (\text{As O}_4)_2$	6.82, 22° -----	Weisbach. N. J. 1874, 302.
Mixite -----	$\text{BiCu}_{10} (\text{OH})_8 (\text{As O}_4)_5$ $7 \text{H}_2 \text{O}$	2.66 -----	Schrauf. Z. K. M. 4, 277.
" -----	"	3.79, 23°.5 ---	Hillebrand. Private communication.
Walpurgite -----	$(\text{U O}_2)_3 \text{Bi}_{10} (\text{As O}_4)_4$ $(\text{O H})_{24}$	5.64 -----	Weisbach. N. J. 1873, 316.

## 3d. Pyroarsenates and Arsenites.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Magnesium pyroarsenate -----	$\text{Mg}_2 \text{As}_2 \text{O}_7$	3.7305, 15° -----	Stallo. F. W. C.
" -----	"	3.7649, 18° -----	
Zinc pyroarsenate -----	$\text{Zn}_2 \text{As}_2 \text{O}_7$	4.6989 -----	
" -----	"	4.7034 -----	" "
Manganese pyroarsenate -----	$\text{Mn}_2 \text{As}_2 \text{O}_7$	3.6625, 25° -----	" "
" -----	"	3.6832 -----	
" -----	"	3.6927 -----	
Lead arsenite -----	$\text{Pb As}_2 \text{O}_4$	5.85, 23° -----	Schafarik. J. P. C. 90, 12.

## XXXVI. PHOSPHATES, VANADATES, AND ARSENATES, COMBINED WITH HALOIDS.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Sodium fluo-phosphate*	$\text{Na}_4(\text{P O}_4)_2 \text{F} \cdot 12\text{H}_2\text{O}$	2.2165	Brigleleh. J. 8, 338.
Sodium fluo-arsenate*	$\text{Na}_4(\text{As O}_4)_2 \text{F} \cdot 12\text{H}_2\text{O}$	2.849	Brigleleh. J. 8, 339.
Wagnerite	$\text{Mg}_2(\text{P O}_4)_2 \text{F}$	2.985	152 } Rammelsberg. P. A.
"	"	3.068	
"	"	3.12	Pisani. Z. K. M.
"	"	"	3, 645.
Artificial vanadium wagnerite.	$\text{Ca}_2(\text{V O}_4)_2 \text{Cl}$	1.91	Hauteville. J. C.
Herderite	$\text{Ca Gl}(\text{P O}_4)_2 \text{F}$	3.00	S. (2), 12, 131.
"	"	3.006	Hidden and Mackintosh. A. J. S.
"	"	3.012	
Triplite	$(\text{Fe Mn})_2(\text{P O}_4)_2 \text{F}$	3.617	(3), 27, 135.
"	"	3.83—3.90	Pentfield and Harper.
Amblygonite	$\text{Al Li}(\text{P O}_4)_2 \text{F}$	3.118	A. J. S. (3), 32, 107.
"	"	3.088	Bergemann. J. P. C.
"	"	3.046	79, 411.
"	"	3.088	Siewert. J. 26, 1185.
"	"	3.046	Breithaupt. J. P. C.
"	"	3.088	16, 476.
Durangite	$\text{Al Na}(\text{As O}_4)_2 \text{F}$	3.967	Pentfield. A. J. S.
Fluorapatite	$\text{Ca}_5(\text{P O}_4)_3 \text{F}$	3.166—3.235	(3), 18, 295.
"	"	3.091—3.216	Brush. A. J. S. (2),
"	"	3.25	34, 213.
Chlorapatite	$\text{Ca}_5(\text{P O}_4)_3 \text{Cl}$	3.054 artif.	Brush. A. J. S. (3),
"	"	2.98	11, 464.
Pyromorphite	$\text{Pb}_3(\text{P O}_4)_2 \text{Cl}$	7.908, artif.	G. Rose. P. A. 9,
"	"	7.054—7.208	185.
"	"	7.93	Pusirewski. J. 15,
Vanadinite	$\text{Pb}_3(\text{V O}_4)_2 \text{Cl}$	6.707, 12 artif.	763.
"	"	6.889	Church. J. C. S.
"	"	6.861	26, 101.
Mimetite	$\text{Pb}_3(\text{As O}_4)_2 \text{Cl}$	7.218	Manross. J. 5, 10.
"	"	7.32	Dubreil. "Études
" Artificial	"	7.12	synthétiques."
Eklundite	$\text{Pb}_3(\text{As O}_4)_2 \text{Cl}_2$	7.11	Manross. J. 5, 10.
Endlichite	$\text{Pb}_3(\text{As O}_4)_2 \text{Cl}$ $\text{Pb}_3(\text{V O}_4)_2 \text{Cl}$	6.861	G. Rose. P. A. 9,
			209.
			Fuchs. J. 20, 1001.
			Roscoe. Z. C. 13,
			357.
			Rammelsberg. J. 9,
			872.
			Struve. J. 12, 805.
			Rammelsberg. J. 7,
			856.
			Smith. J. 8, 965.
			Michel. B. S. M.
			10, 135.
			Nordenskiöld. Z. K.
			M. 2, 309.
			Genth. Am. Phil.
			Soc., 1885.

\* Baker (J. C. S.), May, 1885 assigns more complex formulae to these salts.

## XXXVII. ANTIMONITES AND ANTIMONATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium antimonite -----	$\text{Na Sb O}_2 \cdot 3 \text{ H}_2 \text{ O}$ -----	2.864 -----	Terreil. Ann. (4), 7, 350.
Sodium hydrogen antimonite. -----	$\text{Na H}_2 (\text{Sb O}_2)_3$ -----	5.05 -----	" "
Romeite -----	$\text{Ca} (\text{Sb O}_2) (\text{Sb O}_3) ?$ -----	4.675 } -----	Damour. J. 6, 837.
" -----	" -----	4.714 } -----	
Atopite -----	$\text{Ca}_2 \text{ Sb}_2 \text{ O}_7$ -----	5.03 -----	Nordenskiöld. Dana's Min., 3d App.
Barcenite -----	$\text{Ca Hg} (\text{Sb O}_3)_4$ -----	5.353, 20° -----	Mallet. A. J. S. (3), 16, 306.
Monimolite -----	$\text{Ph}_4 (\text{Sb O}_4)_2 \text{ O}$ -----	5.94 -----	Igelström. Dana's Min.
Bindheimite -----	$\text{Pb}_3 (\text{Sb O}_4)_2 \cdot 4 \text{ H}_2 \text{ O}$ -----	4.60—4.76 -----	Hermann. J. P. C. 34, 179.
" -----	" -----	5.01, 19° -----	Hillebrand. Bull. 20, U. S. G. S.
Nadorite -----	$\text{Pb} (\text{Sb O}_2) \text{ Cl}$ -----	7.02 -----	Flajolot. J. 23, 1280.
Stibioferrite -----	$4 \text{ Fe}''' \text{ Sb O}_4 \cdot 3 \text{ H}_2 \text{ O}$ -----	3.598 -----	Goldsmith. Dana's Min., 2d App.
Thrombolite -----	$\text{Cu}_{10} \text{ Sb}_6 \text{ O}_{19} \cdot 19 \text{ H}_2 \text{ O}$ -----	3.668 -----	Schrauf. Z. K. M. 4, 28.

## XXXVIII. COLUMBATES AND TANTALATES.\*

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Magnesium columbate -----	$\text{Mg}_4 \text{ Cb}_2 \text{ O}_9$ -----	4.3 -----	Joly. C. R. 81, 268.
Manganese columbate -----	? -----	4.94 -----	Joly. B. S. C. 25, 67.
Columbite -----	$\text{Fe Cb}_2 \text{ O}_6$ -----	5.469—5.495 -----	Schlieper. Dana's Min.
" -----	" -----	5.447 -----	Oesten. Dana's Min.
" -----	" -----	5.432—5.452 -----	Breithaupt. J. 11, 720.
" -----	" -----	5.40—5.42 -----	Müller. J. 11, 721.
Manganese columbite -----	$\text{Mn} (\text{Cb O}_3) (\text{Ta O}_3)$ -----	6.59 -----	Comstock. A. J. S. (3), 19, 131.
Tantalite -----	$\text{Fe Ta}_2 \text{ O}_6$ -----	7.264 -----	Nordenskiöld. P. A. 26, 488.
" -----	" -----	7.936 -----	Berzelius. Dana's Min.
" -----	" -----	7.703 -----	Jenzsch. Dana's Min.
" -----	" -----	7.277—7.414 -----	Rose. J. 11, 720.
" -----	" -----	7.2 -----	Smith. A. J. S. (3), 14, 323.
Mangantantalite -----	$\text{Mn Ta}_2 \text{ O}_6$ -----	7.37 -----	Arzruni. J. C. S. 54, 234.
Sipylite -----	$\text{Er Cb O}_4$ -----	4.883, 16° -----	Mallet. Z. K. M. 6, 518.

\* For samarskite, microlite, fergusonite, and other natural columbotantalates see Dana's Mineralogy. The formulae here assigned to columbite, tantalite, and sipylite are only approximative, representing the typical compounds.

## XXXIX. CARBONATES.

## 1st. Simple Carbonates.

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Lithium carbonate	$\text{Li}_2\text{C O}_3$	2.111	Kremers. J. 10, 67.
" "	"	1.787, fused	Quincke. P. A. 138, 141.
Sodium carbonate	$\text{Na}_2\text{C O}_3$	2.4659	Karsten. Schw. J. 65, 394.
" "	"	2.430	Playfair and Joule. M. C. S. 2, 401.
" "	"	2.509	Filhol. Ann. (3), 21, 415.
" "	"	2.407, 20°/5	Favre and Valson. C. R. 77, 579.
" "	"	2.490	Schroder. Dm. 1873.
" "	"	2.510	"
" "	"	2.041, 960°	Braun. J. C. S. (2), 13, 31.
" "	"	2.45, fused	Quincke. P. A. 135, 642.
" "	$\text{Na}_2\text{C O}_3 \cdot 8\text{H}_2\text{O}$	1.51	Thomson. Ann. Phil. (2), 10, 442.
" "	$\text{Na}_2\text{C O}_3 \cdot 10\text{H}_2\text{O}$	1.423	Haidinger. See Bottger.
" "	"	1.154, m. of 4	Playfair and Joule. M. C. S. 2, 401.
" "	"	1.475	Schiff.
" "	"	1.463	Buignet. J. 14, 15.
" "	"	1.455, 15°/5	Helker. P. M. (3), 27, 214.
" "	"	1.4402	Stolba. J. P. C. 97, 503.
" "	"	1.456, 19°	Favre and Valson. C. R. 77, 579.
Thermonatrite	$\text{Na}_2\text{C O}_3 \cdot \text{H}_2\text{O}$	1.5—1.6	Dana's Mineralogy.
Potassium carbonate	$\text{K}_2\text{C O}_3$	2.2643	Karsten. Schw. J. 65, 394.
" "	"	2.103	Playfair and Joule. M. C. S. 2, 401.
" "	"	2.267	Filhol. Ann. (3), 21, 415.
" "	"	2.105	W. C. Smith. Am. J. P. 53, 145.
" "	"	2.00, 1150°	Braun. J. C. S. (2), 13, 31.
Silver carbonate	$\text{Ag}_2\text{C O}_3$	6.0766	Karsten. Schw. J. 65, 394.
" "	"	6.0, 17°/5	Kremers. P. A. 85, 43.
Thallium carbonate	$\text{Tl}_2\text{C O}_3$	7.06	Lamy. J. 15, 186.
" "	"	7.164	Lamy and Des Cloizeaux. Nature 1, 116.
Magnesium carbonate	$\text{Mg C O}_3$	3.037	Neumann. P. A. 23, 1.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Magnesium carbonate	Mg C O <sub>3</sub>	3.056	Mohs.
" "	"	3.065	Scheerer.
" "	"	3.017	Breithaupt.
" "	"	3.033	Hauer.
" "	"	3.017	Marchand and Scheerer. J. 3, 760.
" "	"	3.007 }	Jenzsch. J. 6, 848.
" "	"	3.076 }	
" "	"	3.033	Zepharovich. J. 8, 975.
" "	"	3.015	Zepharovich. J. 18, 906.
" "	Mg C O <sub>3</sub> · 3 H <sub>2</sub> O	1.875	Beckurts. J. C. S. 42, 14.
Zinc carbonate	Zn C O <sub>3</sub>	4.339	Smithson.
" "	"	4.442	Mohs. See Böttger.
" "	"	4.3765	Karsten. Schw. J. 65, 394.
" "	"	4.45	Naumann.
" "	"	4.42	Haidinger.
Cadmium carbonate	Cd C O <sub>3</sub>	4.42, 17°	Herapath. P. M. 64, 321.
" "	"	4.4938	Karsten. Schw. J. 65, 394.
" "	"	4.258	Schröder. Dm. 1873.
Calcium carbonate	Ca C O <sub>3</sub>	2.7000	Karsten. Schw. J. 65, 394.
" " Chalk	"	2.6946	
" " Aragonite	"	2.931	Haidinger.
" " "	"	2.927	Biot.
" " "	"	2.945 }	Beudant.
" " "	"	2.947 }	
" " "	"	2.931	Mohs.
" " "	"	2.938 }	Breithaupt.
" " "	"	2.995 }	
" " "	"	2.926	Neumann. P. A. 23, 1.
" " "	"	2.933, 0°	Kopp.
" " "	"	2.93	Nendtwich.
" " "	"	2.92	Riegel. J. 4, 819.
" " "	"	2.93	Stieren. J. 9, 882.
" " "	"	2.932	Luca. J. 11, 732.
" " Calcite	"	2.7064	Karsten. Schw. J. 65, 394.
" " "	"	2.6987	
" " "	"	2.7213 }	Beudant.
" " "	"	2.7234 }	
" " "	"	2.750	Neumann. P. A. 23, 1.
" " "	"	2.702	Hochstetter. J. 1, 1222.
" " "	"	2.72	Kopp. J. 16, 5.
" " Artificial	"	2.71	Bourgeois. Ann. (5), 29, 493.
" " "	Ca C O <sub>3</sub> · 5 H <sub>2</sub> O	1.783	Pelouze.
" " "	"	1.75	Salm-Horstmar. P. A. 35, 515.
Strontium carbonate	Sr C O <sub>3</sub>	3.605	Mohs. See Böttger.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Strontium carbonate	$\text{Sr C O}_3$	3.6245	Karsten. Schw. J. 65, 394.
" "	"	3.613	v. der Marck. J. 3, 759.
" " Precip.	"	3.548	Schroder. P. A. 106, 226.
Barium carbonate	$\text{Ba C O}_3$	4.24	Breithaupt.
" "	"	4.301	Mohs.
" "	"	4.35	Kirwan.
" "	"	4.3019	Karsten. Schw. J. 65, 394.
" "	"	4.565	Filhol. Ann. (3), 21, 415.
" " Precip.	"	4.216	Schroder. P. A. 106, 226.
" " "	"	4.235	
" " "	"	4.372	Schweitzer. Contr. trib. Lab. Univ. of Missouri, 1876.
" " Ppt. hot	"	4.1721	
" " "	"	4.1975	
" " Ppt. cold	"	4.1609	
" " "	"	4.2811	
Lead carbonate	$\text{Pb C O}_3$	6.165	Mohs. See Bottger.
" "	"	6.5	John.
" "	"	6.47	Breithaupt.
" "	"	6.4277	Karsten. See Bottger.
" "	"	6.60	Smith. J. 8, 972.
" "	"	6.510	Schroder. P. A.
" "	"	6.517	Erganz. Bd. 6, 622.
Manganese carbonate	$\text{Mn C O}_3$	3.592	Mohs. See Bottger.
" "	"	3.553	Kersten. J. P. C. 37, 163.
" "	"	3.6608	Kranz.
" "	"	3.57	Grüner. J. 3, 767.
" " Ppt.	"	3.122	Schroder. P. A. 106, 226.
" "	"	3.129	
Iron carbonate	$\text{Fe C O}_3$	3.829	Mohs. See Bottger.
" "	"	3.815	Dufrenoy.
" "	"	3.872	Neumann. P. A. 23, 4.
" "	"	3.698	Breithaupt. J. P. C. 14, 445.
" "	"	3.796, 6°	Kopp.
Lanthanite	$\text{La}_2 (\text{C O}_3)_3 \cdot 8 \text{ H}_2 \text{ O}$	2.605, 20°	Genth. A. J. S. (2), 28, 425.
"	"	2.696	Blake. J. 6, 850.
Didymium carbonate	$\text{Di}_2 (\text{C O}_3)_3 \cdot 8 \text{ H}_2 \text{ O}$	2.850, } 15° {	Cleve. U. N. A. 1885.
"	"	2.872, }	

## 2d. Double Carbonates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydrogen sodium carbonate.	$\text{Na H C O}_3$ -----	2.192, m. of 2	Playfair and Joule.
" " "	" -----	2.163 -----	M. C. S. 2, 401.
" " "	" -----	2.2208, 15°	Buignet. J. 14, 15.
" " "	" -----	2.207 } -----	Stolba. J. P. C. 97,
" " "	" -----	2.205 } -----	503.
" " "	" -----	2.159 -----	Schröder. Dm. 1873.
Urao -----	$\text{Na}_3 \text{H (C O}_3)_2 \cdot 2 \text{H}_2 \text{O}$	2.1473, 21°	W. C. Smith. Am.
Hydrogen potassium carbonate.	$\text{K H C O}_3$ -----	2.012 -----	J. P. 53, 148.
" " "	" -----	2.092 -----	Chatard. Private
" " "	" -----	2.180 -----	communication.
" " "	" -----	2.140 } -----	Gmelin.
" " "	" -----	2.167 } -----	Playfair and Joule.
" " "	" -----	2.078 -----	M. C. S. 2, 401.
Hydrogenammonium carbonate.	$\text{Am H C O}_3$ -----	1.586 -----	Buignet. J. 14, 15.
Sodium potassium carbonate.	$\text{K Na C O}_3$ -----	2.5289 } -----	Schröder. Dm. 1873.
" " "	" -----	2.5633 } -----	W. C. Smith. Am.
" " "	$\text{K Na C O}_3 \cdot 12 \text{H}_2 \text{O}$	1.6088 } -----	J. P. 53, 145.
" " "	" -----	1.6334 } -----	Playfair and Joule.
Silver potassium carbonate.	$\text{Ag K C O}_3$ -----	3.769 -----	M. C. S. 2, 401.
Gaylussite -----	$\text{Na}_2 \text{Ca (C O}_3)_2 \cdot 5 \text{H}_2 \text{O}$	1.928 -----	Stolba. J. 18, 166.
" -----	" -----	1.950 -----	" "
Dolomite -----	$\text{Ca Mg (C O}_3)_2$ -----	2.914 -----	Schulten. C. R. 105,
" -----	" -----	2.918 -----	813.
" -----	" -----	2.89 -----	Boussingault. Ann.
" -----	" -----	2.924 -----	(2), 31, 270.
" -----	" -----	2.85 -----	Neumann. P. A.
Hydrodolomite -----	$\text{Ca Mg}_2 (\text{C O}_3)_3 \cdot \text{H}_2 \text{O}$	2.495 -----	23, 1.
" -----	" -----	2.86 -----	Ott. J. 1, 1223.
Bromlite -----	$\text{Ca Ba (C O}_3)_2$ -----	3.718 -----	Tschermak. J. 10,
" -----	" -----	3.76, 15°.5	695.
Barytocalcite -----	" -----	3.66 -----	Senft. J. 14, 1027.
Manganocalcite -----	$\text{Ca Mn}_2 (\text{C O}_3)_3$ -----	3.037 -----	Rammelsberg. Da-
Pistomesite -----	$\text{Mg Fe (C O}_3)_2$ -----	3.412 -----	na's Min.
" -----	" -----	3.417 -----	Hermann. J. P. C.
Mesitite -----	$\text{Mg}_2 \text{Fe (C O}_3)_3$ -----	3.349 -----	47, 13.
" -----	" -----	3.363 -----	Thomson.
			Johnston. P. M.
			(3), 6, 1.
			Children. Ann.
			Phil. (2), 8, 114.
			Breithaupt. P. A.
			69, 429.
			Breithaupt. P. A.
			70, 146.
			Breithaupt. P. A.
			11, 170.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ankerite .....	$\text{Ca (Mg Fe) (C O}_3)_2$	3.01 .....	Luboldt. Dana's Min.
" .....	" .....	3.008 .....	E t t l i n g. Dana's Min.
" .....	" .....	3.072 .....	B o r i c k y. J. 22, 1215.
Dawsonite .....	$\text{Al Na (C O}_3) (\text{O H})_2$	2.40 .....	Harrington. Dana's Min., 2d App.

## 3d. Basic Carbonates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hydromagnesite .....	$\text{Mg}_4 (\text{C O}_3)_3 (\text{O H})_2 \cdot 3 \text{ H}_2 \text{O}$	2.145 .....	Smith and Brush. J. 6, 851.
" .....	" .....	2.180 .....	
Hydrogibbsite .....	$\text{Mg}_2 \text{C O}_3 \cdot 3 \text{ H}_2 \text{O}$	2.119—2.174 .....	Seacchi. See Z. K. M. 12, 202.
Hydrozincite .....	$\text{Zn}_3 (\text{C O}_3) (\text{O H})_4$	3.252 .....	Petersen and Voit. A. C. P. 168, 48.
Zarite .....	$\text{Ni}_3 (\text{C O}_3)_4 (\text{O H})_4 \cdot 4 \text{ H}_2 \text{O}$	2.55 .....	B. Silliman, Jr. J. 1, 1225.
" .....	" .....	2.693 .....	
Malachite .....	$\text{Cu}_2 (\text{C O}_3) (\text{O H})_2$	3.715 .....	Breithaupt. Schw. J. 68, 291.
" .....	" .....	3.898 .....	Breithaupt. J. P. C. 16, 475.
" .....	" .....	4.06 .....	Smith. J. 8, 975.
Azurite .....	$\text{Cu}_3 (\text{C O}_3)_2 (\text{O H})_2$	3.88 .....	" .....
" .....	" .....	3.5—3.831 .....	Dana's Mineralogy.
Bismutospherite .....	$\text{Bi}_2 \text{C O}_3$	7.28—7.32 .....	Weisbach. J. C. S. 34, 117.
" .....	" .....	7.42 .....	Wells. A. J. S. (3), 34, 271.
Bismutite .....	$\text{Bi}_2 \text{H}_2 \text{C O}_6$	6.86 .....	Louis. J. C. S. 54, 33.

## XL. SILICATES.\*

## 1st. Silicates Containing But One Metal.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium metasilicate -----	$\text{Na}_2 \text{Si O}_3 \cdot 8 \text{H}_2 \text{O}$ -----	1.666, 18° -----	F. W. Clarke.
Phenakite -----	$\text{Gl}_2 \text{Si O}_4$ -----	2.966 -----	Kokscharow. J. 10, 664.
" -----	" -----	2.996 -----	
" -----	" -----	2.967, 23° -----	
" -----	" -----	2.95 -----	Hillebrand. Bull. 20, U. S. G. S.
Bertrandite -----	$\text{Gl}_4 \text{H}_2 \text{Si}_2 \text{O}_9$ -----	2.593 -----	Hatch. N. J. 1888, 171.
" -----	" -----	2.586 -----	Bertrand. B. S. M. 3, 96.
" -----	" -----	2.55 -----	Damour. B. S. M. 6, 252.
Enstatite -----	$\text{Mg Si O}_3$ -----	3.19 -----	Scherzer. Z. K. M. 14, 41.
" -----	" -----	3.10—3.13 -----	Damour. Dana's Min.
" -----	" -----	3.153 -----	Kenngott. J. 8, 928.
" Artificial -----	" -----	3.11 -----	Brögger and v. Rath. Z. K. M. 1, 22.
Forsterite -----	$\text{Mg}_2 \text{Si O}_4$ -----	3.243 -----	Hautefeuille. J. 17, 212.
" Boltonite -----	" -----	3.008 -----	Rammelsberg. J. 13, 757.
" " -----	" -----	3.208 -----	Silliman, Jr. J. 2, 742.
" " -----	" -----	3.328 -----	Smith. J. 7, 821.
Talc -----	$\text{Mg}_3 \text{H}_2 \text{Si}_4 \text{O}_{12}$ -----	2.48—2.80 -----	
" -----	" -----	2.682 -----	Scheerer. J. 4, 793.
Serpentine -----	$\text{Mg}_3 \text{H}_4 \text{Si}_2 \text{O}_9$ -----	2.557 -----	Senft. Z. G. S. 14, 167.
" -----	" -----	2.644 -----	Rammelsberg. J. 1, 1195.
" -----	" -----	2.57 -----	Delesse. J. 1, 1195.
" -----	" -----	2.564—2.593 -----	Hermann. J. 2, 764.
" -----	" -----	2.597—2.622 -----	Gilm. J. 10, 678.
			Hunt. J. 11, 715.

\* For sp. gr. of silicates before and after fusion see v. Kobell, Bei. 6, 314.

NOTE.—As regards the natural silicates this table is far from complete. Only those compounds are included which admit of fairly definite chemical formulation, and only a few typical determinations of specific gravity are given in each case. Furthermore, the arrangement is absolutely chemical, and is in no sense dependent upon mineralogical considerations. Thus, for example, all the magnesium silicates are brought together; and so also are the numerous double silicates of aluminum and calcium, quite regardless of their classification as mineral species. Many micas, chlorites, scapolites, etc., are omitted altogether; but the omissions are not serious, for all the important data have been many times collected in the larger treatises on mineralogy, and are, therefore, easily accessible.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Willemite	$\text{Zn}_2\text{SiO}_4$	4.18	Levy, B. J. 25, 351.
"	"	4.02	Hermann, J. 2, 743.
"	"	4.11	Mixter, J. 21, 1003.
"	"	4.16	Gorgeu, B. S. C. 47,
" Artificial	"	4.25	146.
Calamine	$\text{Zn}_2\text{SiO}_4 \cdot \text{H}_2\text{O}$	3.435	Hermann, J. P. C.
"	"	"	33, 98.
"	"	3.43—3.46	Monheim, J. 1, 1187.
"	"	3.42	Schnabel, J. 11, 710.
"	"	3.36	Wieser, J. 24, 1155.
"	"	3.338, 217	McIlroy, J. 26, 1175.
Wollastonite	$\text{CaSiO}_3$	2.884	Seibert. See Batt-
"	"	"	ger.
"	"	2.853	v. Rath, J. 24, 1145.
"	"	2.799	Piquet, J. 25, 1104.
" Artificial	"	2.7	Bourgeois, Ann. (5),
"	"	"	29, 441.
"	"	2.88	Gorgeu, Ann. (6),
"	"	"	4, 515.
Xenotime	$4\text{CaSiO}_6 \cdot \text{H}_2\text{O}$	2.710—2.718	Rammelsberg, J. 19,
"	"	"	562.
Okenite	$\text{CaSi}_2\text{O}_6 \cdot 2\text{H}_2\text{O}$	2.324	Schmidt, J. 18, 889.
"	"	2.28	Kobell, Dana's Min.
"	"	2.362	Connell, Dana's Min.
Rhodonite	$\text{MnSiO}_3$	3.63	Hermann, J. 2, 738.
"	"	3.63	Igelstrom, J. 4, 768.
"	"	3.65	Fine, J. 36, 1891.
" Artificial	"	3.68	Gorgeu, Ann. (6), 4,
"	"	"	515.
Hydrhodonite	$\text{MnSiO}_3 \cdot \text{H}_2\text{O}$	2.70	Engstrom.
Penwithite	$\text{MnSiO}_3 \cdot 2\text{H}_2\text{O}$	2.49	Collins, Z. K. M.
"	"	"	5, 623.
Tephroite	$\text{Mn}_2\text{SiO}_4$	4.1	Brush, J. 17, 837.
"	"	4.0	Mixter, S. 21, 1006.
" Artificial	"	4.34	Gorgeu, C. R. 98,
"	"	"	920.
"	"	4.08	Gorgeu, Ann. (6),
"	"	"	4, 515.
Friedelite	$\text{Mn}_4\text{H}_4\text{Si}_8\text{O}_{12}$	3.97	Bertrand, C. R. 82,
"	"	"	1167.
Gunnellite	$\text{FeSiO}_3$	3.713	Gruner, C. R. 24,
"	"	"	794.
Fayalite	$\text{Fe}_2\text{SiO}_4$	4.138	Gmelin, B. J. 21, 200.
"	"	4.006	Delesse, J. 7, 821.
" Artificial	"	4.1	Gorgeu, Ann. (6),
"	"	"	4, 515.
Chrysocolla	$\text{CuSiO}_3 \cdot 2\text{H}_2\text{O}$	2.0—2.238	Dana's Mineralogy.
Diopside	$\text{CaH}_2\text{SiO}_4$	3.314	Kenngott, J. 3, 732.
"	"	3.348	"
Kyanite	$\text{Al}_2\text{O}_3\text{SiO}_3$	3.48	Igelstrom, J. 7, 819.
"	"	3.661	Erdmann, B. J. 24,
"	"	"	311
"	"	3.678	Jacobson, P. A. 68,
"	"	"	416.
Andalusite	$\text{Al}_2(\text{SiO}_3)_3(\text{AlO}_3)$	3.070	Rowney, J. 14, 982.
"	"	3.154	Erdmann, B. J. 24,
"	"	"	311.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Andalusite-----	$\text{Al}_3 (\text{Si O}_4)_3 (\text{Al O})_3$	3.152 -----	Kersten. J. P. C. 37, 163.
“ -----	“ -----	3.160 -----	Damour. Ann. d. Mines (5), 4, 53.
“ -----	“ -----	3.07—3.12 -----	Schmid. P. A. 97, 113.
Fibrolite-----	“ -----	3.18—3.21 -----	Damour. J. 18, 881.
“ -----	“ -----	3.239 -----	Erdmann. B. J. 24, 311.
“ -----	“ -----	3.238 -----	Dana. Dana's Min.
“ -----	“ -----	3.232 -----	Brush. “ “
Dumortierite-----	$\text{Al}_2 (\text{Si O}_4)_3 (\text{Al O})_6$	3.36 -----	Damour. Z. K. M. 6, 289.
Xenolite -----	$\text{Al}_4 (\text{Si O}_4)_3$	3.58 -----	Nordenskiöld. P. A. 56, 643.
Kaolinite -----	$\text{Al}_2 \text{ O H} (\text{Si O}_4)_2 \text{ H}_3$	2.6 -----	Clark. J. 4, 786.
“ -----	“ -----	2.4—2.63 -----	Dana's Mineralogy.
“ -----	“ -----	2.611 -----	Hillebrand. Bull. 20, U. S. G. S.
Pyrophyllite-----	$\text{Al H} (\text{Si O}_3)_2$	2.78—2.79 -----	Sjögren. J. 2, 757.
“ -----	“ -----	2.81 -----	Brush. J. 11, 707.
“ -----	“ -----	2.804 -----	Genth. Z. K. M. 4, 384.
“ -----	“ -----	2.82 -----	Tyson and Allen. J. 15, 745.
“ -----	“ -----	2.812 -----	Genth. J. 36, 1903.
Allophane -----	$\text{Al}_2 \text{ Si O}_5 \cdot 6 \text{ H}_2 \text{ O}$	2.02 -----	Schnabel. J. 2, 756.
“ -----	“ -----	1.85—1.89 -----	Dana's Mineralogy.
Szaboite -----	$\text{Fe}'''_2 (\text{Si O}_3)_3$	3.505 -----	Koch. Z. K. M. 3, 308.
Nontzonite. Chloropal	$\text{Fe}'''_2 (\text{Si O}_3)_3 \cdot 5 \text{ H}_2 \text{ O}$	1.727—1.870 -----	Dana's Mineralogy.
“ -----	“ -----	2.105 -----	Thomson. Dana's Min.
Zircon -----	$\text{Zr Si O}_4$	4.047 -----	Damour. J. 1, 1171.
“ -----	“ -----	4.595 -----	Wetherill. J. 6, 796.
“ -----	“ -----	4.602 -----	Hunt. J. 4, 768.
“ -----	“ -----	4.625 -----	
“ -----	“ -----	4.395 -----	
“ -----	“ -----	4.515 -----	
“ -----	“ -----	4.438 -----	
“ -----	“ -----	4.863 -----	Church. J. 17, 834.
“ -----	“ -----	4.709, 21° -----	
Cerium orthosilicate-----	$\text{Ce}_4 (\text{Si O}_4)_3$	4.9 -----	Cross and Hillebrand. J. 36, 1839.
Thorium metasilicate-----	$\text{Th} (\text{Si O}_3)_2$	5.56, 25° -----	Didier. C. R. 19, 882.
Thorium orthosilicate-----	$\text{Th Si O}_4$	6.82, 16° -----	Troost and Ouvrard. C. R. 105, 255.
Thorite. (Orangite)-----	$2 \text{ Th Si O}_4 \cdot 3 \text{ H}_2 \text{ O} ?$	5.397 -----	“ “
“ “ -----	“ -----	5.34 -----	Bergemann. P. A. 82, 562.
“ “ -----	“ -----	5.19 -----	Krantz. P. A. 82, 586.
“ “ -----	“ -----	4.888—5.205 -----	Damour. Ann. d. Mines (5), 1, 587.
“ (Ordinary) -----	“ -----	4.344—4.397 -----	Chydenius. P. A. 119, 43.
Eulytite -----	$\text{Bi}_4 (\text{Si O}_4)_3$	5.912—6.006 -----	“ “
“ -----	“ -----	6.106, 17° -----	Dana's Mineralogy. v. Rath. J. 22, 1209.

## 2d. Silicates Containing More Than One Metal.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Pectolite	$\text{H Na Ca}_2 (\text{Si O}_3)_3$	2.784	Scott. J. 5, 866.
"	"	2.778—2.881	Hedden and Greg. J. 8, 952.
"	"	2.873	Clarke. Bull. 9, U. S. G. S.
Melaccolite	$\text{Ca Mg} (\text{Si O}_3)_2$	3.37	Bonsdorff. Dana's Min.
"	"	3.285	Haushofer. J. 20, 984.
"	"	3.192	Doelter. Z. K. M. 4, 89.
"	"	3.273—3.275	Hunt. Dana's Min.
Tremolite	$\text{Ca Mg}_3 (\text{Si O}_3)_4$	2.930—3.004	Rammelsberg. J. 11, 694.
"	"	2.99	Michaelson. Dana's Min.
"	"	2.996, 22°	König. Z. K. M. 1, 50.
Heulenbergite	$\text{Ca Fe} (\text{Si O}_3)_2$	3.467, 25°	Wölff. J. P. C. 34, 236.
"	"	3.192	Doelter. Z. K. M. 4, 90.
Monticellite	$\text{Ca Mg Si O}_4$	3.119	Rammelsberg. J. 13, 758.
"	"	3.05	Freda. J. 36, 1876.
Knebelite	$\text{Fe Mn Si O}_4$	3.714, 18° 5'	Doelter and Schw. J. 21, 49.
"	"	4.122	Erdmann. Dana's Min.
Kentrolite	$\text{Mn}^{++} \text{Pb}_2 \text{Si}_2 \text{O}_6$	6.19	v. Roth. Z. K. M. 5, 35.
Melanotekite	$\text{Fe}^{++} \text{Pb}_2 \text{Si}_2 \text{O}_6$	5.73	Lindström. Z. K. M. 6, 515.
Hyalotekite	$\text{Ca Ba Pb Si}_6 \text{O}_{15}$	3.81	Nordenskiöld.
Vetalite	$\text{Al Li} (\text{Si}_2 \text{O}_6)_2$	2.417—2.455	Rammelsberg. J. 5, 858.
"	"	2.412—2.553	Danour. Dana's Min.
" (Cæstorite)	"	2.382—2.401	Breithaupt. P. A. 69, 148.
Spodumene	$\text{Al Li} (\text{Si O}_3)_2$	3.170	Mohs. See Bottger.
"	"	3.1327—3.137	Rammelsberg. J. 5, 857.
"	"	3.16	Pisani. Z. K. M. 2, 100.
" Hiddenite	"	3.177	Genth. Z. K. M. 6, 522.
Eucliptite	$\text{Al}_2 \text{Li}_3 \text{Si O}_{13}$	2.647	Brush and Dana. A. J. S. 13, 20, 266.
"	"	2.667	"
Aluminum lithium silicate	$\text{Al}_2 \text{Li}_2 \text{Si}_5 \text{O}_{14}$	2.40, 12°	Hauteville. C. R. 90, 541.
"	$\text{Al Li Si}_4 \text{O}_{12}$	2.41, 11°	"
Albite	$\text{Al Na Si}_3 \text{O}_8$	2.642	Eggers. Dana's Min.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Albite	$\text{Al Na Si}_3 \text{O}_8$	2.609, 12°	Streng. J. 24, 1151.
"	"	2.59	Leeds. J. 26, 1166.
"	"	2.604	Genth. J. 36, 1896.
"	"	2.618	Buerwald. J. 36, 1897.
"	"	2.601	Laeroix. Z. K. M. 14, 112.
" Artificial	"	2.61	Hautefeuille. Z. K. M. 2, 107.
Jadeite	$\text{Al Na (Si O}_3)_2$	3.26—3.36	Damour. B. S. M. 4, 157.
"	"	3.33	Damour. Z. K. M. 6, 290.
"	"	3.326—3.355	Hallock. { Unpub- lished data from
"	"	3.26—3.34	Hawes. { U. S. National Museum.
"	"	3.35	Taylor.
Nephelite	$\text{Al}_8 \text{Na}_8 \text{Si}_9 \text{O}_{34}$	2.56—2.617	Scheerer. P. A. 49, 359.
"	"	2.629	Kimball. J. 13, 762.
"	"	2.600—2.6087	Rammelsberg. Z. G. S. 29, 78.
"	"	2.60—2.63	Lorenzen. J. 36, 1884.
Analcite	$\text{Al Na H}_2 \text{Si}_2 \text{O}_7$	2.262—2.288	Waltershausen. J. 11, 711.
"	"	2.236	Waltershausen. J. 6, 820.
"	"	2.278	Thomson. Dana's Min.
"	"	2.222	Bamberger. Z. K. M. 6, 33.
Eudnophite	"	2.27	Weibye. J. 3, 735.
Paragonite	$\text{Al}_3 \text{Na H}_2 (\text{Si O}_4)_3$	2.779	Schafhäutl. Dana's Min.
" Pregrattite	"	2.895	Oellacher. Dana's Min.
" Cossaitite	"	2.890—2.896	Gastaldi. Dana's Min., 2d App.
Hydronephelite	$\text{Al}_3 \text{Na}_2 \text{H} (\text{Si O}_4)_3 \cdot 3 \text{H}_2 \text{O}$	2.263	Diller. A. J. S. (3), 31, 267.
Natrolite	$\text{Al}_2 \text{Na}_2 \text{H}_4 (\text{Si O}_4)_3$	2.207, 11°	Gmelin. J. 3, 733.
"	"	2.254—2.258	Kenngott. J. 6, 820.
"	"	2.249	Brush. A. J. S. (2), 31, 365.
Orthoclase	$\text{Al K Si}_3 \text{O}_8$	2.5702	Breithaupt. See Bottger.
"	"	2.573	Rammelsberg. J. 20, 988.
"	"	2.576—2.586	v. Rath. J. 24, 1150.
"	"	2.572—2.595	Genth. J. 36, 1896.
" Artificial	"	2.55, 16°	Hautefeuille. Z. K. M. 2, 514.
Leucite	$\text{Al K (Si O}_3)_2$	2.519	Bischof. Dana's Min.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Leucite	$\text{Al K (Si O}_3)_2$	2.48	Rammelsberg, J. 9, 852.
"	"	2.479, 23°	v. Rath, J. 27, 1255.
" Artificial	"	2.47, 13°	Hautefeuille, Z. K. M. 5, 411.
Muscovite	$\text{Al}_3 \text{K H}_2 (\text{Si O}_4)_3$	2.817	Kussin, Dana's Min.
"	"	2.714—2.796	Grailich, Dana's Min.
"	"	2.830—2.831	Tschermak, Z. K. M. 3, 127.
"	"	2.855	Scharizer, Z. K. M. 12, 15.
Pollucite	$\text{Al}_2 \text{Cs}_2 \text{H}_2 (\text{Si O}_3)_5$	2.868—2.892	Breithaupt, P. A. 69, 439.
"	"	2.901	Pisani, J. 17, 859.
"	"	2.893	Rammelsberg, Z. K. M. 6, 286.
Grossularite	$\text{Al}_2 \text{Ca}_3 (\text{Si O}_4)_3$	3.522—3.536	Hunt, Dana's Min.
"	"	3.609	Webster, J. 22, 1214.
"	"	3.572	Jannasch, J. 36, 1880.
Anorthite	$\text{Al}_2 \text{Ca} (\text{Si O}_4)_2$	2.763	Rose, See Bottger.
"	"	2.73	Deyville, J. 7, 832.
"	"	2.7325	Potyka, J. 12, 785.
"	"	2.668	Silliman, Dana's Min.
"	"	2.686	v. Rath, J. 27, 1255.
Idocrase	$\text{Al}_4 \text{Ca}_4 (\text{Si O}_4)_7$ ?	3.3123—3.3205	Karsten, See Bottger.
"	"	3.384	Rammelsberg, J. 2, 745.
"	"	3.41	Damour, J. 24, 1153.
"	"	3.2533	Korn, J. 36, 1874.
"	"	3.403—3.472	Jannasch, J. 36, 1875.
Melilite	$\text{Al}_2 \text{Ca}_6 \text{Si}_5 \text{O}_{19}$	2.9—3.101	Dana's Mineralogy.
"	"	2.95	Damour, Ann. 69, 10, 59.
Melionite*	$\text{Al}_6 \text{Ca}_4 \text{Si}_6 \text{O}_{21}$	2.734—2.737	v. Rath, P. A. 90, 87.
"	"	2.716, 16°	Neminar, J. 28, 1227.
Gehlenite	$\text{Al}_2 \text{Ca}_3 \text{Si}_2 \text{O}_{10}$	2.9—3.067	Dana's Mineralogy.
"	"	2.997	Janovsky, J. 26, 1179.
Prehnite	$\text{Al}_2 \text{Ca}_2 \text{H}_2 (\text{Si O}_4)_3$	2.926	Mohs, See Bottger.
"	"	2.845—2.897, 4	Strong, N. J. 1870, 314.
"	"	3.042	Genth, J. 36, 1185.
Heulandite	$\text{Al}_2 \text{Ca H}_{10} \text{Si}_6 \text{O}_{21}$	2.195	Thomson, Dana's Min.
"	"	2.1963	Jeromejew, Z. K. M. 2, 503.
Stilbite	$\text{Al}_2 \text{Ca H}_{12} \text{Si}_6 \text{O}_{21}$	2.203	Munster, P. A. 65, 297.

\* For other data relative to the zeolite group see Dana's Mineralogy and also Tschermak's memoir in M. C. 1, 884.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Stilbite	$\text{Al}_2 \text{Ca H}_{12} \text{Si}_6 \text{O}_{22}$	2.134	Waltershausen. Dana's Min.
"	"	2.16	Schmid. J. 24, 1158.
Laumontite	$\text{Al}_2 \text{Ca H}_8 \text{Si}_4 \text{O}_{16}$	2.268	Breithaupt. See Böttger.
"	"	2.252	Mallet. Dana's Min.
"	"	2.280—2.310	Gericke. J. 9, 861.
Scolezite	$\text{Al}_2 \text{Ca}_2 \text{H}_6 \text{Si}_3 \text{O}_{13}$	2.393	Waltershausen. J. 6, 819.
"	"	2.28	Collier. Dana's Min.
"	"	2.27	Lüdecke. Z. K. M. 6, 312.
Chabazite	$\text{Al}_2 \text{Ca H}_{12} \text{Si}_4 \text{O}_{18}$	2.094	Breithaupt. See Böttger.
"	"	2.08—2.19	Dana's Mineralogy.
"	"	2.133	Streng. Z. K. M. 1, 519.
"	"	2.115	Rammelsberg. J. 9, 849.
Zoisite	$\text{Al}_3 \text{Ca}_2 \text{H Si}_3 \text{O}_{13}$	3.251—3.361	
"	"	3.226—3.381	Breithaupt. Dana's Min.
Margarite	$\text{Al}_4 \text{Ca H}_2 \text{Si}_2 \text{O}_{12}$	2.99	Hermann. J. P. C. 53, 16.
Oligoclase	$\text{Al}_3 \text{Ca Na}_3 \text{Si}_{11} \text{O}_{32}$	2.66—2.68	Kerndt. J. 1, 1182.
"	"	2.725	v. Rath. J. 11, 706.
"	"	2.643—2.689	Petersen. J. 25, 1112.
Andesite	$\text{Al}_3 \text{Ca Na Si}_3 \text{O}_{16}$	2.651—2.736	Delesse. J. 1, 1183.
"	"	2.667—2.674	Hunt. J. 14, 995.
Labradorite	$\text{Al}_7 \text{Ca}_3 \text{Na Si}_9 \text{O}_{32}$	2.719—2.883	Delesse. J. 1, 1183.
"	"	2.709	Damour. J. 3, 723.
"	"	2.697	Hunt. J. 4, 782.
"	"	2.72—2.77, 15°.	Streng. J. 15, 736.
Faujasite	$\text{Al}_4 \text{CaNa}_2 \text{H}_4 (\text{SiO}_3)_{10} \cdot 18 \text{H}_2 \text{O}$	1.923	Damour. Ann. d. Mines (4), 1, 395.
Thomsonite	$2 \text{Al}_2 (\text{Ca Na}_2) \text{Si}_2 \text{O}_8 \cdot 5 \text{H}_2 \text{O}$	2.35—2.38	Zippe. Dana's Min.
"	"	2.357	Rammelsberg. J. P. C. 59, 348.
" Lintonite	"	2.32—2.37	Peckham and Hall. A. J. S. (3), 19, 122.
Gmelinite	$\text{Al}_2 (\text{CaNa}_2) \text{H}_{12} \text{Si}_4 \text{O}_{18}$	2.07	Damour. J. 12, 796.
"	"	2.099—2.169	Dana's Mineralogy.
"	"	2.100	Liversidge. J. 36, 1895.
Milnarite	$\text{Al}_2 \text{Ca}_2 \text{K H} (\text{Si}_2 \text{O}_5)_6$	2.5529	Ludwig. Z. K. M. 2, 631.
Phillipsite	$\text{Al}_2 (\text{Ca K}_2) \text{H}_8 \text{Si}_4 \text{O}_{16}$	2.201	Waltershausen. Dana's Min.
"	"	2.213	Marignac. B. J. 26, 351.
"	"	2.150, 21°	W. Fresenius. Z. K. M. 3, 42.
"	"	2.160, 20°	
Strontium oligoclase	$\text{Al}_5 \text{Sr Na}_3 \text{Si}_{11} \text{O}_{32}$	2.619	Fouqué and Lévy. C. R. 90, 622.
Strontium labradorite	$\text{Al}_7 \text{Sr}_3 \text{Na Si}_9 \text{O}_{32}$	2.862	" "
Strontium anorthite	$\text{Al}_2 \text{Sr} (\text{Si O}_4)_2$	3.043	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Barium oligoclase	$\text{Al}_2 \text{Ba Na}_3 \text{Si}_{11} \text{O}_{32}$	2.906	Fouqué and Lévy, C. R. 90, 622.
Barium labradorite	$\text{Al}_2 \text{Ba}_3 \text{Na Si}_9 \text{O}_{32}$	3.333	" "
Barium anorthite	$\text{Al}_2 \text{Ba (Si O}_4)_2$	3.573	" "
Harmotome	$\text{Al}_2 \text{Ba H}_{10} \text{Si}_5 \text{O}_{19}$	2.392	Mohs. See Bottger, Dana's Mineralogy.
"	"	2.14—2.45	Damour, Dana's Min.
"	"	2.447	"
"	"	2.402, 21°	W. Fresenius, Z. K. M. 3, 42.
Lead oligoclase	$\text{Al}_2 \text{Pb Na}_3 \text{Si}_{11} \text{O}_{32}$	3.196	Fouqué and Lévy, C. R. 90, 622.
Lead labradorite	$\text{Al}_2 \text{Pb}_3 \text{Na Si}_9 \text{O}_{32}$	3.609	" "
Lead anorthite	$\text{Al}_2 \text{Pb (Si O}_4)_2$	4.063	" "
Eucrase	$\text{Al}_2 \text{Gl H Si O}_5$	3.036	Mallet, J. 6, 800.
"	"	3.097	Des Cloizeaux, Dana's Min.
"	"	3.066—3.103	Kokscharow, Dana's Min.
"	"	3.087	Guyot, Z. K. M. 5, 250.
Beryl	$\text{Al}_2 \text{Gl}_3 (\text{Si O}_3)_6$ or $\text{Al}_4 \text{Gl}_5 \text{H}_2 \text{Si}_{11} \text{O}_{34}$	2.813	Mallet, J. 7, 828.
"	"	2.686	Haughton, J. 15, 720.
"	"	2.650	Petersen, J. 19, 925.
"	"	2.706	Penfield and Harper, A. J. S. (3), 32, 111.
"	"	2.681—2.725	Kokscharow, Dana's Min.
" Emerald	"	2.614	Boussingault, J. 22, 1216.
"	"	2.710—2.759	Kammerer, Dana's Min.
Tollite	$\text{Al}_4 \text{Mg}_2 \text{Si}_5 \text{O}_{18}$	2.605	Kokscharow, J. 13, 797.
"	"	2.6699, 16°	Schachtel, Z. K. M. 7, 594.
"	"	2.6708, 18°	Jost, Z. K. M. 7, 594.
Ripidolite	$\text{Al}_2 \text{Mg}_5 \text{Si}_3 \text{O}_{16} \cdot 4\text{H}_2\text{O}$	2.771	Rose, Dana's Min.
"	"	2.603	Hermann, Dana's Min.
"	"	2.673	Merignac, Dana's Min.
"	"	2.711	Blake, Dana's Min.
Arctolite	$\text{Al}_2 \text{M}_2 \text{Ca H}_2 (\text{Si O}_4)_2$	3.93	Blenstrand.
Manganese garnet. Arctifol.	$\text{Al}^3 \text{Mn}_3 \text{Si O}_4$	4.05, 11°	Gorgeu, C. R. 97, 1303.
Kerophane	$\text{Al}_2 \text{Mn H}_4 \text{S}_2 \text{O}_{19}$	2.935	Breithaupt, Dana's Min.
"	"	2.876	Koninek, Z. K. M. 4, 222.
Almandine	$\text{Al}_2 \text{Fe}^3 \text{Si O}_4$	3.99—4.236	Wachtmeister, Dana's Min.
"	"	4.196	Mallet, Dana's Min.
"	"	4.197	Webster, J. 21, 1013.
"	"	4.127	Hobbs, J. 36, 1881.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Partschinite -----	$\text{Al}_2 \text{Fe}'' \text{Mn}_2 (\text{Si O}_4)_3$	4.006 -----	Haidinger. J. 7, 826.
Venasquite -----	$\text{Al}_2 \text{Fe}'' \text{H}_2 \text{Si}_3 \text{O}_{11}$	3.26 -----	Damour. Z. K. M. 4, 413.
Chloritoid -----	$\text{Al}_2 \text{Fe}'' \text{H}_2 \text{Si O}_7$	3.52 -----	Smith. J. 3, 741.
" -----	" -----	3.513 -----	Hunt. J. 14, 1011.
" -----	" -----	3.528 -----	Tschermak and Si-pöcz. Z. K. M. 3, 508.
Ouvarovite -----	$\text{Cr}_2 \text{Ca}_3 (\text{Si O}_4)_3$	3.5145 -----	Erdmann. B. J. 23, 291.
" -----	" -----	3.41—3.52 -----	Dana's Mineralogy.
Aemite -----	$\text{Fe}''' \text{Na} (\text{Si O}_3)_2$	3.536—3.543 -----	Breithaupt. See Böttger.
" -----	" -----	3.530 -----	Rammelsberg. J. 11, 695.
" -----	" -----	3.520 -----	Doelter. Z. K. M. 4, 92.
Andradite -----	$\text{Fe}'''_2 \text{Ca}_3 (\text{Si O}_4)_3$	3.85 -----	Damour. J. 9, 848.
" -----	" -----	3.796—3.798 -----	Kokseharow. J. 12, 782.
" -----	" -----	3.797 -----	Fellenberg. J. 20, 984.
" -----	" -----	3.740 -----	Dana. Z. K. M. 2, 311.
" Demantoid -----	" -----	3.828 -----	Rammelsberg. Z. K. M. 3, 103.
" -----	" -----	3.81, 15° -----	Cossa. Z. K. M. 5, 602.
Crocidolite -----	$\text{Fe}'''_2 \text{Fe}''_3 \text{Na}_2 \text{H}_4 (\text{Si O}_3)_9$	3.200 -----	Stromeyer and Hausmann. P. A. 23, 153.
" -----	" -----	3.2 -----	Chester. A. J. S. (3), 34, 108.
Lievrte -----	$\text{Fe}''' \text{Fe}''_2 \text{Ca H Si}_2 \text{O}_9$	3.711 -----	Tobler. J. 9, 851.
" -----	" -----	4.023 -----	Städeler. J. 19, 934.
" -----	" -----	4.05 -----	Lorenzen. J. 36, 1879.
Thuringite. (Owenite) -----	$\text{Fe}'''_4 \text{Fe}''_4 \text{Si}_3 \text{O}_{16} \cdot 5 \text{H}_2 \text{O}$	3.197, 20° -----	Genth. A. J. S. (2), 16, 167.
" " -----	" -----	3.191 -----	Smith. A. J. S. (2), 18, 376.
" -----	" -----	3.177 -----	Zepharovich. Z. K. M. 1, 371.
Sphene -----	$\text{Ca Ti Si O}_5$	3.49—3.51 -----	Hunt. J. 6, 837.
" -----	" -----	3.44 -----	Fuchs. Dana's Min.
" -----	" -----	3.535 -----	Rose. " "
" Greenovite -----	" -----	3.547 -----	Hintze. Z. K. M. 2, 310.
" Artificial -----	" -----	3.45 -----	Hautefeuille. J. 17, 216.
Guarinite -----	" -----	3.487 -----	Guiscardi. J. 11, 718.
Zirconium potassium silicate.	$\text{Zr K}_2 \text{Si}_2 \text{O}_7$	2.79 -----	Mellis. Göttingen Doct. Diss., 1870.
Zirconium sodium silicate	$\text{Zr}_2 \text{Na}_2 \text{Si O}_{19} \cdot 11 \text{H}_2 \text{O}$	3.53 -----	" " "
Calcium tin silicate -----	$\text{Ca Sn Si O}_5$	4.34 -----	Bourgeois. C. R. 104, 233.

## 3d. Boro-, Fluo-, and Other Mixed Silicates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Danburite	$\text{Ca B}_2\text{Si}_2\text{O}_8$	2.986	Brush and Dana. Z. K. M. 5, 185.
"	"	3.021	Boschwig. Z. K. M. 7, 297.
"	"	2.986	"
"	"	2.988	"
Datolite	$\text{Ca H B Si O}_5$	2.989	Mohs. See Bottger.
"	"	2.994	Breithaupt. See Bottger.
"	"	2.983	Whitney. J. 12, 801.
"	"	2.987—3.014	Tschermak. J. 13, 778.
"	"	2.988	Smith. J. 27, 1270.
Homilite	$\text{Ca}_2\text{Fe B}_2\text{Si}_2\text{O}_{10}$	3.28	Paikull. Z. K. M. 1, 385.
Howlite	$\text{Ca}_2\text{H}_3\text{B}_3\text{Si O}_{11}$	2.59	Penfield and Sperry. A. J. S. (3), 34, 221.
Axinite	$\text{Al}_2\text{Ca Fe Mn}_4\text{H}_2\text{B Si}_5\text{O}_{31}$	3.271	Mohs. See Bottger.
Tourmaline. Colorless	$\text{Al B O}_2\text{Si O}_{12}\text{R}_6$	3.07—3.085	Riggs. A. J. S. (3), 35, 35.
" Red	"	2.998—3.082	Rammelsberg. J. 3, 744.
" "	"	2.997—3.028	Riggs. A. J. S. (3), 35, 35.
" Green	"	3.099—3.112	Rammelsberg. J. 3, 744.
" Brown	"	3.035—3.068	" "
" Black	"	3.205—3.243	" "
" "	"	3.08—3.20	Riggs. A. J. S. (3), 35, 35.
Apophyllite	$\text{Ca}_4\text{K H}_2\text{Si O}_{12}\text{F}$ $1\text{H}_2\text{O}$	2.335	Mohs. See Bottger.
"	"	2.305	Jackson. J. 3, 733.
"	"	2.97	Smith. J. 7, 838.
Leucophane	$\text{Gl}_4\text{Ca}_4\text{Na}_4\text{Si}_4\text{O}_{22}\text{F}_4$	2.964	Rammelsberg. J. 9, 867.
"	"	2.971	Erdmann. B. J. 21, 168.
Melinophane	$\text{Gl}_4\text{Ca}_4\text{Na}_{12}\text{Si}_4\text{O}_{16}\text{F}_{12}$	3.00	Scheerer. J. 5, 883.
"	"	3.018	Rammelsberg. J. 9, 867.
Topaz	$\text{Al}_2\text{Si O}_4\text{F}_2$	3.479—3.517	Breithaupt. See Bottger.
"	"	3.52—3.53	Kokcharow. J. 9, 867.
"	"	3.511—3.563	Rammelsberg. J. P. C. 96, 7.
"	"	3.533—3.597	Church. Geol. Mag. (2), 2, 320.
"	"	3.578, 223	Hillebrand. Bul. 20, U. S. G. S.
Lepidolite	$\text{Al}_2\text{K Li Si}_3\text{O}_9\text{F}_4$	2.834—2.8546	Berwerth. Z. K. M. 2, 523.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lepidolite -----	$\text{Al}_2 \text{K Li Si}_3 \text{O}_9 \text{F}_2$ -----	2.838 -----	Scharizer. Z. K. M. 12, 15.
Phlogopite -----	$\text{Al}_2 \text{Mg}_5 \text{H K Si}_5 \text{O}_{18} \text{F}_2$ -----	2.78—2.85 -----	Dana's Mineralogy.
“ -----	“ -----	2.81 -----	Kenngott. J. 15, 742.
“ -----	“ -----	2.959, 16° -----	Berwerth. Z. K. M. 2, 521.
“ -----	“ -----	2.742—2.867 -----	Tschermak. Z. K. M. 3, 127.
Calcium chlorosilicate -----	$\text{Ca}_3 \text{Si O}_4 \text{Cl}_2$ -----	2.77 -----	Le Chatelier. C. R. 97, 1510.
Sodalite -----	$\text{Al}_4 \text{Na}_5 (\text{Si O}_4)_4 \text{Cl}$ -----	2.401 -----	v. Rath. Dana's Min.
“ -----	“ -----	2.31 -----	Lorenzen. J. 36, 1884.
“ -----	“ -----	2.3405, 21° -----	Bamberger. Z. K. M. 5, 584.
“ -----	“ -----	2.294—2.314 -----	Kimball. J. 13, 775.
Marialite -----	$\text{Al}_3 \text{Na}_4 \text{Si}_9 \text{O}_{24} \text{Cl}$ -----	2.626, 19° -----	v. Rath. Z. G. S. 18, 635.
Pyrosmalite -----	$\text{Mn}_5 \text{Fe}'_5 \text{H}_{14} (\text{Si O}_4)_8 \text{Cl}_2$ -----	3.168—3.174 -----	Lang. J. P. C. 83, 424.
“ -----	“ -----	3.081 -----	Hisinger. Dana's Min.
Helvite -----	$\text{Gl}_3 \text{Mn}_4 (\text{Si O}_4)_3 \text{S}$ -----	4.306 -----	Lewis. Z. K. M. 7, 425.
“ -----	“ -----	3.23—3.37 -----	Kokscharow. J. 22, 1228.
Danalite -----	$\text{Gl}_3 \text{Fe}_3 \text{Zn} (\text{Si O}_4)_3 \text{S}$ -----	3.427 -----	Cooke. A. J. S. (2), 42, 73.
Nosean -----	$\text{Al}_4 \text{Na}_6 (\text{Si O}_4)_4 \text{S O}_4$ -----	2.25—2.4 -----	Dana's Mineralogy.
“ -----	“ -----	2.279—2.399 -----	v. Rath. Z. G. S. 16, 86.
Complex silicate and sulphide.	$\text{Ca}_{18} \text{Al}_2 \text{S}_2 \text{O}_{35} \cdot 2 \text{Ca S}$ -----	3.054 -----	Rammelsberg. J. P. C. (2), 35, 98.
Thaumasite -----	$\text{Ca}_3 \text{Si O}_3 \text{S O}_4 \text{C O}_3 \cdot 14 \text{H}_2 \text{O}$ -----	1.877, 19° -----	Lindström. J. 33, 1484.
Calcium silicophosphate -----	$\text{Ca}_5 \text{Si O}_4 (\text{P O}_4)_2$ -----	3.042 -----	Carnot and Richard. B. S. M. 6, 241.

## XLI. TITANATES AND STANNATES.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Calcium titanate. Artificial.	$\text{Ca Ti O}_3$ -----	4.10 -----	Ebelmen.
“ “ “	“ -----	4.00 -----	Hautefeuille. J. 17, 217.
“ “ Perovskite.	“ -----	4.017 -----	Rose. B. J. 20, 210.
“ “ “	“ -----	4.038 -----	Damour. J. 8, 960.
“ “ “	“ -----	3.974, 20° -----	Brun. Z. K. M. 7, 389.
Strontium titanate -----	$\text{Sr}_2 \text{Ti}_3 \text{O}_8$ -----	5.1 -----	Bourgeois. C. R. 103, 141.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Barium titanate	$\text{Ba}_2 \text{Ti}_3 \text{O}_8$	5.91	Bourgeois, C. R. 103, 141.
Magnesium titanate	$\text{Mg Ti O}_3$	3.91	Hautefeuille, J. 17, 217.
Magnesium orthotitanate	$\text{Mg}_2 \text{Ti O}_4$	3.52	" "
Ilmenite	$\text{Fe Ti O}_3$	4.727	Marignac, B. J. 26, 372.
Iron orthotitanate	$\text{Fe}_2 \text{Ti O}_4$	4.37	Hautefeuille, J. 17, 217.
Zinc titanate	$\text{Zn Ti}_3 \text{O}_8$	4.92, 15 <sup>3</sup>	Levy, C. R. 105, 380.
Potassium stannate	$\text{K}_2 \text{Sn O}_6 \cdot 3 \text{H}_2 \text{O}$	3.197	Orlway, J. 18, 240.

## XLII. CYANOGEN COMPOUNDS.\*

## 1st. General Division.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cyanogen, Liquefied	$\text{C}_2 \text{N}_2$	3.96, 17 <sup>2</sup> .2	Faraday, P.T. 1845, 155.
Hydrocyanic acid	$\text{H C N}$	7058, 7 <sup>2</sup>	Gay Lussac, Ann. 95, 136.
" "	"	710, 6 <sup>2</sup>	Trautwein.
" "	"	706, 2 <sup>2</sup> .8	Cooper, P. A. 47, 527.
Cyanic acid	$\text{H C N O}$	1.1558, —20 <sup>2</sup>	Troost and Haute-
" "	"	1.110, 0 <sup>2</sup>	feuille, J. 21, 314.
Cyanuric acid	$\text{H}_3 \text{C}_3 \text{N}_3 \text{O}_3$	1.768, 0 <sup>2</sup>	
" "	"	2.500, 19 <sup>2</sup>	Troost and Haute-
" "	"	2.228, 21 <sup>2</sup>	feuille, J. 22, 99.
" "	"	1.725, 48 <sup>2</sup>	
" "	"	1.722	Schroder, Ber. 13,
" "	"	1.735	1070.
Cyanelide	$\text{H C N (O)}_n$	1.974, 0 <sup>2</sup>	Troost and Haute-
" "	"	1.774, 24 <sup>2</sup>	feuille, J. 22, 99.
Hydrosulphocyanic acid	$\text{H C N S}$	1.0013, 10 <sup>2</sup>	Clasen.
" "	"	1.022	Porrett, P.T. 1814,
" "	"	1.0082	548.
" "	"		Meitzendorff, P. A.
Tricyanogen trichloride	$\text{C}_3 \text{N}_3 \text{Cl}_3$	1.32	56, 63.
			Serullas, Ann. (2),
			38, 370.
Cyanogen iodide	$\text{C N I}$	1.85	Weltzien's "Zu-
			sammenstellung."

\* Exclusive of organic cyanides, or compounds containing organic radicals.

## 2d. Cyanides, Cyanates, and Sulphocyanides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium cyanide	$KCN$	1.52, 12°	Bödeker. B. D. Z.
Silver cyanide	$AgCN$	3.943, 11°	Giesecke. "
Mercury cyanide	$Hg(CN)_2$	3.77, 13°	Bödeker. "
" "	"	4.0036, 14° 2'	Clarke. A. J. S.
" "	"	4.0262, 12°	(3), 16, 201.
" "	"	4.0026, 22° 2'	Creighton. F. W. C.
" "	"	3.990	Wittmann. "
" "	"	4.011	Schröder. Ber. 13,
Mercury oxycyanide	$HgO \cdot Hg(CN)_2$	4.419 } 23° 2'	1070.
" "	"	4.428	Clarke. A. J. S.
" "	"	4.437, 19° 2'	(3), 16, 201.
Mercury chlorocyanide	$HgCl(CN)$	4.514, 26°	Creighton. F. W. C.
" "	"	4.531, 21° 7'	Wittmann. "
Mercury potassium cyanide.	$K_2Hg(CN)_4$	2.4470, 21° 2'	Creighton. "
" "	"	2.4551, 24°	
" "	"	2.4620, 21° 5'	
Potassium chromocyanide	$K_4Cr(CN)_6$	1.71	Moissan. Ann. (6),
Potassium manganicyanide.	$K_3Mn(CN)_6$	1.821	4, 138.
Sodium ferrocyanide	$Na_4Fe(CN)_6 \cdot 12H_2O$	1.458	Topsoë. B. S. C.
Potassium ferrocyanide	$K_4Fe(CN)_6 \cdot 3H_2O$	1.83	19, 246.
" "	"	1.86	Bunsen.
" "	"	2.052	Watts' Dictionary.
Thallium ferrocyanide	$Tl_4Fe(CN)_6 \cdot 2H_2O$	4.641	Schiff. J. 12, 41.
Ammonium ferrocyanide with ammonium chloride.	$Am_4Fe(CN)_6 \cdot 2AmCl \cdot 3H_2O$	1.490	Buignet. J. 14, 15.
Potassium ferricyanide	$K_3FeCy_6$	1.8004	Lamy and Des Cloi- zeaux. Nature 1,
" "	"	1.845	142.
" "	"	1.849	Topsoë. C. C. 4, 76.
" "	"	1.817	Schabus. J. 3, 359.
" "	"	1.849, 15° 3'	
" "	"	1.854, 15° 3'	
" "	"	1.855, 15°	
" "	"	1.861, 15°	
" "	"	2.42 } 14° 2'	
Silver ammonio-ferricyanide.	$4AgFe(CN)_6 \cdot 6N \cdot H_2O$	2.47	Wallace. J. 7, 378.
Sodium nitroprusside	$Na_4Fe_2(CN)_{10} \cdot (NO)_2 \cdot 4H_2O$	1.710	Schiff. J. 12, 41.
" "	"	1.716	Buignet. J. 14, 15.
" "	"	1.6869, 25°	Schröder. Dm. 1873.
" "	"	1.713	
" "	"	1.731	
Potassium nickel cyanide	$K_2Ni(CN)_4 \cdot H_2O$	1.871, 14° 5'	Dudley. F. W. C.
" "	"	1.875, 11°	
Potassium cobaltcyanide.	$K_3Co(CN)_6$	1.906, 11°	Bödeker. B. D. Z.
" "	"	1.913	Topsoë. C. C. 4, 76.
Potassium platinoocyanide.	$K_2Pt(CN)_4 \cdot 3H_2O$	2.4548, 16°	Dudley. F. W. C.
" "	"	2.5241, 13°	
Barium platinoocyanide	$BaPt(CN)_4$	3.054	Schabus. J. 3, 360.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Samarium platinecyanide	$\text{Sm}_2\text{Pt}_2(\text{CN})_{12} \cdot 18\text{H}_2\text{O}$	2.743	Cleve, U. S. A. 1885.
Thorium platinecyanide	$\text{ThPt}_2(\text{CN})_{12} \cdot 16\text{H}_2\text{O}$	2.715 } 20° 8	
		2.460	Topsøe, B. S. C. 21, 118.
Potassium cyanate	$\text{K C N O}$	2.0175, 16°	Mendius, B. D. Z.
		2.056, 4°	Schroder, Ber. 12, 561.
Silver cyanate	$\text{Ag C N O}$	1.001, 16°	Mendius, B. D. Z.
		3.998	Schroder, Ber. 14, 1070.
Potassium sulphocyanide	$\text{K C N S}$	1.866	Boeleker, B. D. Z.
		1.906	
		1.891	Schroder, Ber. 11, 2215.
Ammonium sulphocyanide	$\text{Am C N S}$	1.299	Dudley, F. W. C.
		1.316	
		1.316	Schroder, Ber. 11, 2215.
Lead sulphocyanide	$\text{Pb (C N S)}_2$	3.82	Schabus, J. 3, 362.
Phosphorus sulphocyanide	$\text{P}_4(\text{C N S})_6$	1.625, 18°	Miquel, J. C. S. 32, 872.
Potassium chromium sulphocyanide	$\text{K}_6\text{Cr(CNS)}_{12} \cdot 8\text{H}_2\text{O}$	1.7051, 17.5	Dudley, F. W. C.
		1.7107, 16°	
Potassium platinsulphocyanide	$\text{K}_2\text{Pt (C N S)}_6$	2.342, 18°	" "
		2.370, 19°	
Potassium platinselenocyanide	$\text{K}_2\text{Pt (C N Se)}_6$	3.377, 10.12	" "
		3.378, 12° 5	
Titanium nitrocyanide	$\text{Ti (C N)}_2 \cdot 3\text{Ti}_3\text{N}_2$	5.30	Wollaston, P. T. 1823, 17.
		5.28001	Karsten, Schw. J. 65, 394.
Samarium sulphocyanide with mercuric cyanide	$\text{Sm (C N S)}_2 \cdot 3\text{Hg (CN)}_2 \cdot 12\text{H}_2\text{O}$	2.742, 18° 2.743, 18° 4	Cleve, U. S. A. 1885.

## XLIII. MISCELLANEOUS INORGANIC COMPOUNDS.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Nitrogen-chlorophosphide	$\text{P}_3\text{N}_3\text{Cl}_3$	1.98	Gladstone and Holmes, J. 17, 148.
Mercury sulphide with copper chloride	$\text{Hg S} \cdot \text{Cu Cl}_2$	6.29	Raschig, A. C. P. 228, 27.
Mercury chloride with ammonium dichromate	$\text{Hg Cl}_2 \cdot \text{Am}_2\text{Cr}_2\text{O}_7$	3.1850, 18°	Heighway, F. W. C.
		3.2326, 21°	
		3.0824, 11°	Langenbeck, P. W. C.
Mercury cyanide with potassium chromate	$2\text{Hg Cy}_2 \cdot \text{K}_2\text{CrO}_4$	3.564, 21° 8	H. Schmidt, F. W. C.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium nitrate-sulphate.	$K_2 S O_4 \cdot H N O_3$	2.38	Jacquelin. A. C. P. 32, 234.
Potassium phosphato-sulphate.	$K_2 S O_4 \cdot H_3 P O_4$	2.296	" "
Hanksite	$4 Na_2 S O_4 \cdot Na_2 C O_3$	2.562	Hidden. A. J. S. (3), 30, 135.
Phosgenite	$Pb_2 C O_3 Cl_2$	6.305	Rammelsberg. P. A. 85, 141.
Leadhillite	$Pb_4 S O_4 (C O_3)_3$	6.550	Gadolin. J. 6, 846.
"	"	6.526	Kokscharow. J. 6, 846.
Bastnäsite (Hannartite)	$(Ce La Di) (C O_3) F$	4.93	Nordenskiöld. J. 22, 1246.
"	"	5.18—5.20	Allen and Comstock. A. J. S. (3), 19, 390.
Parisite	$(Ce La Di)_2 (C O_3)_4 \cdot Ca F_2$	4.35	Bunsen. Dana's Min.
"	"	4.317	Dufrenoy. Dana's Min.

## XLIV. ALLOYS.\*

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
SODIUM AND POTASSIUM.		
Na K -----	.8993	} ----- Hagen. P. A. (2), 19, 436.
" -----	.8994	
" -----	.8905, 49.5, fluid	
ZINC AND CALCIUM.†		
Zn <sub>12</sub> Ca -----	6.369	} ----- v. Rath. Z. C. 12, 665.
" -----	6.3726	
ALLOYS OF MERCURY. AMALGAMS.		
Hg Zn -----	11.304	Calvert and Johnson. J. 12, 120.
Hg <sub>5</sub> Cd <sub>2</sub> -----	12.615	Croockewitt. J. 1, 393.
Hg Pb -----	11.93	" "
" -----	12.284, 15°.7	Matthiessen. P. T. 1860, 177.
Hg Pb <sub>2</sub> -----	11.979, 15°.9	" "
Hg <sub>3</sub> Pb <sub>2</sub> -----	12.49, 17°	Bauer. J. 24, 317.
Hg <sub>2</sub> Pb -----	12.815, 15°.5	Matthiessen. P. T. 1860, 177.
Hg <sub>2</sub> Sn -----	11.3816	Kupffer. Ann. (2), 40, 285.
" -----	11.456, 11°.3	Holzmann. P. T. 1860, 177.

\* This table contains only a moderate number of the many determinations which have been made relative to the specific gravity of alloys. Only those alloys have been admitted which allow of relatively simple chemical formulae. Some of them are doubtless true chemical compounds, but in most cases the formulae merely represent proportionate composition.

† See also Norton and Twitchell, A. C. J. 10, 79.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
ALLOYS OF MERCURY. AMALGAMS—continued.		
Hg Sn	10.3447	Kupffer, Ann. (2), 40, 285.
"	10.369, 142.2	Holzmann, P. T. 1860, 177.
"	10.255	Calvert and Johnson, J. 12, 120.
Hg Sn <sub>2</sub>	9.3185	Kupffer, Ann. (2), 40, 285.
"	9.362, 92.9	Holzmann, P. T. 1860, 177.
"	9.314	Calvert and Johnson, J. 12, 120.
Hg Sn <sub>3</sub>	8.8218	Kupffer, Ann. (2), 40, 285.
"	8.805	Calvert and Johnson, J. 12, 120.
Hg Sn <sub>4</sub>	8.510	" "
Hg Sn <sub>5</sub>	8.312	" "
Hg Sn <sub>6</sub>	8.151	" "
Hg Bi	11.208	" "
Hg Bi <sub>2</sub>	10.693	" "
"	10.45	Crookewitt, J. 1, 393.
Hg Bi <sub>3</sub>	10.474	Calvert and Johnson, J. 12, 120.
Hg Bi <sub>4</sub>	10.350	" "
Hg Bi <sub>5</sub>	10.240	" "
Hg <sub>3</sub> Ag <sub>17</sub> Native	12.703, 17	Weiss, J. 36, 1819.
Hg <sub>2</sub> Au	15.412	Crookewitt, J. 1, 393.
ALLOYS OF ALUMINUM.		
Al Zn	4.532	Hirzel, J. 11, 138.
Al <sub>6</sub> Sn	3.583	" "
Al <sub>5</sub> Sn	3.794	" "
Al <sub>4</sub> Sn	4.025	" "
Al <sub>3</sub> Sn	4.276	" "
Al <sub>2</sub> Sn	4.744	" "
Al Sn	5.454	" "
Al Sn <sub>2</sub>	6.294	" "
Al Sn <sub>3</sub>	6.536	" "
Al <sub>3</sub> Cu	4.45—4.52	Marignac, J. 21, 215.
Al Ta	7.92	Marignac, J. 24, 212.
Al Cr	4.6	Wohler, J. 11, 160.
Al W	5.58	Michel, J. 13, 130.
Al <sub>3</sub> Mn	3.402	Michel, J. 13, 131.
Al <sub>6</sub> Ni	3.647	Michel, J. 13, 132.
Al <sub>14</sub> Cu	2.764	Hirzel, J. 11, 138.
Al <sub>6</sub> Cu	3.206	" "
Al <sub>5</sub> Cu	3.316	" "
Al <sub>11</sub> Cu <sub>3</sub>	3.579	" "
Al <sub>7</sub> Cu <sub>2</sub>	3.724	" "
Al <sub>7</sub> Cu	3.972	" "
Al <sub>9</sub> Cu <sub>4</sub>	4.148	" "
Al <sub>2</sub> Cu	4.355	" "
Al Cu	5.731	" "
Al Cu <sub>2</sub>	6.946	" "
Al Cu <sub>3</sub>	7.204	" "
Al Cu <sub>4</sub>	7.534	" "
Al Cu <sub>5</sub>	7.727	" "
Al Cu <sub>6</sub>	7.751	" "
Al <sub>2</sub> Cu <sub>14</sub>	7.884	" "
Al <sub>2</sub> Ag	6.733	Hirzel, J. 11, 137.
Al Ag	8.744	" "
Al Ag <sub>2</sub>	9.376	" "

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
TIN AND ZINC.		
Sn <sub>2</sub> Zn	7.235	Croockewitt. J. 1, 394.
"	7.274	Calvert and Johnson. J. 12, 120.
Sn Zn	7.115	Croockewitt. J. 1, 394.
"	7.262	Calvert and Johnson. J. 12, 120.
Sn Zn <sub>2</sub>	7.096	Croockewitt. J. 1, 394.
"	7.188	Calvert and Johnson. J. 12, 120.
Sn Zn <sub>3</sub>	7.180	" "
Sn Zn <sub>4</sub>	7.155	" "
Sn Zn <sub>5</sub>	7.140	" "
Sn Zn <sub>10</sub>	7.135	" "
TIN AND CADMIUM.		
Sn <sub>6</sub> Cd	7.434, 12° 7	Matthiessen. P. T. 1860, 177.
Sn <sub>4</sub> Cd	7.489, 15°	" "
Sn <sub>2</sub> Cd	7.690, 12° 9	" "
Sn Cd	7.904, 13° 2	" "
Sn Cd <sub>2</sub>	8.139, 11° 1	" "
Sn Cd <sub>4</sub>	8.336, 14° 5	" "
Sn Cd <sub>6</sub>	8.432, 15°	" "
TIN AND LEAD.		
Sn <sub>12</sub> Pb	7.628, 19° 4	Vicentini and Omodei. Bei. 12, 178. Melting point, 181°.
"	7.4849, 181° s.	
"	7.3513, 212° 1	
"	7.3209, 218° 7	
"	7.3041, 249° 4	
"	7.2726, 275° 3	
"	7.2490, 304° 2	
"	7.2294, 329°	
"	7.2088, 354° 8	
Sn <sub>6</sub> Pb	7.9210	Kupffer. Ann. (2), 40, 285.
"	7.927, 15° 2	Long. P. T. 1860, 177.
Sn <sub>5</sub> Pb	8.0279	Kupffer. Ann. (2), 40, 285.
"	8.093	Calvert and Johnson. J. 12, 120.
"	8.046	Riche. J. 15, 111.
Sn <sub>4</sub> Pb	8.1730	Kupffer. Ann. (2), 40, 285.
"	7.850	Thomson. J. 1, 1040.
"	8.188, 16°	Long. P. T. 1860, 177.
"	8.196	Calvert and Johnson. J. 12, 120.
"	8.2347	Pillichody. J. 14, 279.
"	8.195	Riche. J. 15, 111.
"	8.177, 16° 7	Vicentini and Omodei. Bei. 12, 178. Melting point, 183° 3.
"	8.0735, 183° 3 s.	
"	7.8393, 209° 1	
"	7.8090, 240° 4	
"	7.7917, 260° 4	
"	7.7586, 295° 5	
"	7.7323, 324° 7	
"	7.7032, 357° 6	
Sn <sub>7</sub> Pb <sub>2</sub>	8.291	Riche. J. 15, 111.
Sn <sub>3</sub> Pb	8.3914	Kupffer. Ann. (2), 40, 285.
"	8.549	Thomson. J. 1, 1040.
"	9.025	Croockewitt. J. 1, 394.
"	8.418	Calvert and Johnson. J. 12, 120.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
TIN AND LEAD—contin'd.		
$\text{Sn}_3 \text{Pb}$ -----	8.4087 -----	Pillichody. J. 14, 279.
" -----	8.414 -----	Riche. J. 15, 111.
" -----	8.400, $17^\circ$ -----	Vicentini and Omodei. Bei. 12, 178. Melting point, $182^\circ.9$ .
" -----	8.2949, $182^\circ.9$ , s. -----	
" -----	8.0821, $182^\circ.9$ , l. -----	
" -----	8.0755, $189^\circ.7$ -----	
" -----	8.0431, $222^\circ.9$ -----	
" -----	8.0150, $250^\circ$ -----	
" -----	7.9896, $275^\circ.9$ -----	
" -----	7.9695, $296^\circ.3$ -----	
" -----	7.9446, $323^\circ.9$ -----	Riche. J. 15, 111.
" -----	7.9212, $349^\circ.5$ -----	
$\text{Sn}_5 \text{Pb}_2$ -----	8.565 -----	Kupffer. Ann. (2), 40, 285.
$\text{Sn}_2 \text{Pb}$ -----	8.7454 -----	Regnault. P. A. 53, 67.
" -----	8.777, $13^\circ.3$ -----	Thomson. J. 1, 1040.
" -----	8.688 -----	Long. P. T. 1860, 177.
" -----	8.779, $17^\circ.2$ -----	Calvert and Johnson. J. 12, 120.
" -----	8.774 -----	Pillichody. J. 14, 279.
" -----	8.7257 -----	Riche. J. 15, 111.
" -----	8.766 -----	Vicentini and Omodei. Bei. 12, 178. Melting point, $182^\circ.3$ .
" -----	8.745, $15^\circ.2$ -----	
" -----	8.6298, $182^\circ.3$ , s. -----	
" -----	8.4509, $182^\circ.3$ , l. -----	
" -----	8.4381, $189^\circ$ -----	
" -----	8.4038, $207^\circ$ -----	
" -----	8.3532, $242^\circ.5$ -----	
" -----	8.3204, $272^\circ.9$ -----	
" -----	8.2920, $303^\circ.1$ -----	Pillichody. J. 14, 279.
" -----	8.2688, $325^\circ.5$ -----	
" -----	8.2448, $351^\circ.5$ -----	Riche. J. 15, 111.
$\text{Sn}_3 \text{Pb}_2$ -----	9.0377 -----	
" -----	9.046 -----	Pohl. J. 3, 324.
$\text{Sn}_2 \text{Pb}_3$ -----	9.2773, $15^\circ$ -----	Kupffer. Ann. (2), 40, 285.
$\text{Sn} \text{Pb}$ -----	9.4263 -----	Regnault. P. A. 53, 67.
" -----	9.387, $13^\circ.3$ -----	Thomson. J. 1, 1040.
" -----	9.288 -----	Croockewitt. J. 1, 394.
" -----	9.394 -----	Long. P. T. 1860, 177.
" -----	9.460, $15^\circ.5$ -----	Calvert and Johnson. J. 12, 120.
" -----	9.458 -----	Pillichody. J. 14, 279.
" -----	9.4330 -----	Riche. J. 15, 111.
" -----	9.451 -----	Vicentini and Omodei. Bei. 12, 178. Melting point, $181^\circ.8$ .
" -----	9.422, $20^\circ$ -----	
" -----	9.2809, $181^\circ.8$ , s. -----	
" -----	9.180, $181^\circ.8$ , l. -----	
" -----	9.1348, $201^\circ.6$ -----	
" -----	9.0953, $216^\circ.7$ -----	
" -----	9.0438, $233^\circ$ -----	
" -----	8.9864, $248^\circ.8$ -----	
" -----	8.9643, $262^\circ.3$ -----	Pohl. J. 3, 323.
" -----	8.9276, $293^\circ$ -----	
" -----	8.8989, $317^\circ$ -----	
" -----	8.8774, $337^\circ$ -----	
" -----	8.8590, $356^\circ$ -----	Pillichody. J. 14, 279.
$\text{Sn}_3 \text{Pb}_4$ -----	9.6399, $15^\circ$ -----	Kupffer. Ann. (2), 40, 285.
$\text{Sn}_2 \text{Pb}_3$ -----	9.7974 -----	
$\text{Sn} \text{Pb}_2$ -----	10.0782 -----	

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
TIN AND LEAD—contin'd.		
Sn Pb <sub>2</sub> -----	9.966 -----	Croockewitt. J. 1, 394.
" -----	10.080, 14°.8 -----	Long. P. T. 1860, 177.
" -----	10.105 -----	Calvert and Johnson. J. 12, 120.
" -----	10.0520 -----	Pillichody. J. 14, 279.
" -----	10.110 -----	Riche. J. 15, 111.
Sn Pb <sub>3</sub> -----	10.3868 -----	Kupffer. Ann. (2), 40, 285.
" -----	10.421 -----	Calvert and Johnson. J. 12, 120.
" -----	10.3311 -----	Pillichody. J. 14, 279.
" -----	10.419 -----	Riche. J. 15, 111.
Sn Pb <sub>4</sub> -----	10.5551 -----	Kupffer. Ann. (2), 40, 285.
" -----	10.590, 14°.3 -----	Long. P. T. 1860, 177.
" -----	10.587 -----	Calvert and Johnson. J. 12, 120.
" -----	10.5957 -----	Pillichody. J. 14, 279.
Sn Pb <sub>5</sub> -----	10.751 -----	Calvert and Johnson. J. 12, 120.
Sn Pb <sub>6</sub> -----	10.815, 15°.6 -----	Long. P. T. 1860, 177.
LEAD AND CADMIUM.		
Cd <sub>6</sub> Pb -----	9.160, 13°.7 -----	Holzmann. P. T. 1860, 177.
Cd <sub>4</sub> Pb -----	9.353, 12° -----	" " "
Cd <sub>2</sub> Pb -----	9.755, 14°.7 -----	" " "
Cd Pb -----	10.246, 11°.7 -----	" " "
Cd Pb <sub>2</sub> -----	10.656, 13°.4 -----	" " "
Cd Pb <sub>4</sub> -----	10.950, 9°.2 -----	" " "
Cd Pb <sub>6</sub> -----	11.044, 14°.8 -----	" " "
ANTIMONY AND TIN.		
Sb <sub>12</sub> Sn -----	6.739, 16°.2 -----	Long. P. T. 1860, 177.
Sb <sub>8</sub> Sn -----	6.747, 13°.4 -----	" " "
Sb <sub>4</sub> Sn -----	6.781, 13°.5 -----	" " "
Sb <sub>2</sub> Sn -----	6.844, 13°.8 -----	" " "
Sb Sn -----	6.929, 15°.8 -----	" " "
Sb Sn <sub>2</sub> -----	7.023, 15°.8 -----	" " "
Sb Sn <sub>3</sub> -----	7.100, 10°.6 -----	" " "
Sb Sn <sub>5</sub> -----	7.140, 19° -----	" " "
Sb Sn <sub>10</sub> -----	7.208, 18°.5 -----	" " "
Sb Sn <sub>20</sub> -----	7.276, 19°.4 -----	" " "
Sb Sn <sub>50</sub> -----	7.279, 20° -----	" " "
Sb Sn <sub>100</sub> -----	7.284, 24°.2 -----	" " "
ANTIMONY AND LEAD.		
Sb <sub>8</sub> Pb -----	7.214 -----	Riche. J. 15, 111.
Sb <sub>6</sub> Pb -----	7.361 -----	" " "
Sb <sub>5</sub> Pb -----	7.432 -----	Calvert and Johnson. J. 12, 120.
Sb <sub>4</sub> Pb -----	7.525 -----	" " "
" -----	7.622 -----	Riche. J. 15, 111.
Sb <sub>3</sub> Pb -----	7.830 -----	Calvert and Johnson. J. 12, 120.
Sb <sub>2</sub> Pb -----	8.330 -----	" " "
" -----	8.201, 13°.7 -----	Matthiessen. P. T. 1860, 177.
" -----	8.233 -----	Riche. J. 15, 111.
Sb Pb -----	8.953 -----	Calvert and Johnson. J. 12, 120.
" -----	8.989, 11°.7 -----	Matthiessen. P. T. 1860, 177.
" -----	8.999 -----	Riche. J. 15, 111.
Sb <sub>2</sub> Pb <sub>3</sub> -----	9.502 -----	" " "

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
ANTIMONY AND LEAD— continued.		
Sb Pb <sub>2</sub> .....	9.723 .....	Calvert and Johnson. J. 12, 120.
" .....	9.811, 14° 3 .....	Matthiessen. P. T. 1860, 177.
" .....	9.817 .....	Riché. J. 15, 111.
Sb <sub>2</sub> Pb <sub>3</sub> .....	10.040 .....	" .....
Sb Pb <sub>3</sub> .....	10.136 .....	Calvert and Johnson. J. 12, 120.
" .....	10.144, 15° 4 .....	Matthiessen. P. T. 1860, 177.
" .....	10.211 .....	Riché. J. 15, 111.
Sb <sub>2</sub> Pb <sub>7</sub> .....	10.344 .....	" .....
Sb Pb <sub>4</sub> .....	10.387 .....	Calvert and Johnson. J. 12, 120.
" .....	10.455 .....	Riché. J. 15, 111.
Sb <sub>2</sub> Pb <sub>9</sub> .....	10.541 .....	" .....
Sb Pb <sub>5</sub> .....	10.556 .....	Calvert and Johnson. J. 12, 120.
" .....	10.586, 19° 3 .....	Matthiessen. P. T. 1860, 177.
" .....	10.615 .....	Riché. J. 15, 111.
Sb <sub>2</sub> Pb <sub>11</sub> .....	10.673 .....	" .....
Sb Pb <sub>6</sub> .....	10.722 .....	" .....
Sb <sub>2</sub> Pb <sub>11</sub> .....	10.764 .....	" .....
Sb Pb <sub>7</sub> .....	10.802 .....	" .....
Sb Pb <sub>10</sub> .....	10.930, 19° 6 .....	Matthiessen. P. T. 1860, 177.
Sb Pb <sub>15</sub> .....	11.164, 20° 5 .....	" .....
BISMUTH AND ZINC.		
Bi Zn .....	9.046 .....	Calvert and Johnson. J. 12, 120.
BISMUTH AND CADMIUM.		
Bi <sub>12</sub> Cd .....	9.766, 15° 4 .....	Matthiessen. P. T. 1860, 177.
Bi <sub>4</sub> Cd .....	9.737, 14° 7 .....	" .....
Bi <sub>4</sub> Cd .....	9.669, 14° 8 .....	" .....
Bi <sub>2</sub> Cd .....	9.554, 13° 4 .....	" .....
Bi Cd .....	9.388, 15° .....	" .....
Bi Cd <sub>2</sub> .....	9.195, 15° 5 .....	" .....
Bi Cd <sub>3</sub> .....	9.079, 13° 4 .....	" .....
BISMUTH AND TIN.		
Bi <sub>100</sub> Sn .....	9.815, 18° 1 .....	Carty. P. T. 1860, 177.
Bi <sub>100</sub> Sn .....	9.814, 19° 5 .....	" .....
Bi <sub>100</sub> Sn .....	9.811, 19° .....	" .....
Bi <sub>88</sub> Sn .....	9.806, 22° 8 .....	" .....
Bi <sub>60</sub> Sn .....	9.774, 23° .....	" .....
Bi <sub>100</sub> Sn .....	9.737, 19° 8 .....	" .....
Bi <sub>100</sub> Sn .....	9.675, 15° 32 .....	" .....
Bi <sub>117</sub> Sn .....	9.644, 12° 7 .....	" .....
Bi <sub>4</sub> Sn .....	9.435, 15° .....	" .....
Bi <sub>4</sub> Sn .....	9.434 .....	Riché. J. 15, 112.
Bi <sub>4</sub> Sn .....	9.178, 15° 9 .....	Carty. P. T. 1860, 177.
" .....	9.145 .....	Riché. J. 15, 111.
Bi Sn .....	8.759 .....	Regnault. P. A. 53, 67.
" .....	8.772, 12° 6 .....	Carty. P. T. 1860, 177.
" .....	8.754 .....	Riché. J. 15, 112.
Bi Sn .....	8.506 .....	" .....
Bi Sn <sub>2</sub> .....	8.085 .....	Regnault. P. A. 53, 67.
" .....	8.339, 13° 9 .....	Carty. P. T. 1860, 177.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
BISMUTH AND TIN— continued.		
Bi Sn <sub>2</sub> -----	8.327 -----	Riche. J. 15, 112.
Bi <sub>1</sub> Sn <sub>5</sub> -----	8.199 -----	" " "
Bi Sn <sub>3</sub> -----	8.112, 14° 2'-----	Carty. P. T. 1860, 177.
"-----	8.097 -----	Riche. J. 15, 112.
Bi <sub>1</sub> Sn <sub>7</sub> -----	8.017 -----	" " "
Bi Sn <sub>4</sub> -----	7.943, 20°-----	Carty. P. T. 1860, 177.
Bi Sn <sub>22</sub> -----	7.438, 19° 9'-----	" " "
BISMUTH AND LEAD.		
Bi <sub>60</sub> Pb-----	9.844, 21° 7'-----	Carty. P. T. 1860, 177.
Bi <sub>48</sub> Pb-----	9.845, 21° 6'-----	" " "
Bi <sub>40</sub> Pb-----	9.850, 21° 3'-----	" " "
Bi <sub>24</sub> Pb-----	9.887, 20° 6'-----	" " "
Bi <sub>23</sub> Pb-----	9.893, 19° 5'-----	" " "
Bi <sub>16</sub> Pb-----	9.934, 21° 1'-----	" " "
Bi <sub>12</sub> Pb-----	9.973, 15°-----	" " "
Bi <sub>8</sub> Pb-----	10.048, 10° 7'-----	" " "
"-----	8.6 -----	E. Wiedemann. P. A. (2), 20, 240.
Bi <sub>4</sub> Pb-----	10.235, 12° 5'-----	Carty. P. T. 1860, 177.
"-----	10.232 -----	Riche. J. 15, 111.
"-----	9.73 -----	E. Wiedemann. P. A. (2), 20, 239.
Bi <sub>2</sub> Pb-----	10.538, 14°-----	Carty. P. T. 1860, 177.
"-----	10.519 -----	Riche. J. 15, 111.
"-----	10.96 -----	E. Wiedemann. P. A. (2), 20, 239.
Bi Pb-----	10.956, 14° 9'-----	Carty. P. T. 1860, 177.
"-----	10.931 -----	Riche. J. 15, 111.
"-----	11.03 -----	E. Wiedemann. P. A. (2), 20, 237.
Bi <sub>4</sub> Pb <sub>5</sub> -----	11.038 -----	Riche. J. 15, 111.
Bi <sub>2</sub> Pb <sub>3</sub> -----	11.108 -----	" " "
Bi <sub>4</sub> Pb <sub>7</sub> -----	11.166 -----	" " "
Bi Pb <sub>2</sub> -----	11.141, 12° 7'-----	Carty. P. T. 1860, 177.
"-----	11.194 -----	Riche. J. 15, 111.
"-----	11.4 -----	E. Wiedemann. P. A. (2), 20, 236.
Bi <sub>2</sub> Pb <sub>5</sub> -----	11.209 -----	Riche. J. 15, 111.
Bi Pb <sub>3</sub> -----	11.161, 14° 8'-----	Carty. P. T. 1860, 177.
"-----	11.225 -----	Riche. J. 15, 111.
Bi <sub>2</sub> Pb <sub>7</sub> -----	11.235 -----	" " "
Bi Pb <sub>4</sub> -----	11.188, 20° 8'-----	Carty. P. T. 1860, 177.
Bi Pb <sub>5</sub> -----	11.196, 20° 2'-----	" " "
Bi Pb <sub>12</sub> -----	11.280, 22° 5'-----	" " "
Bi Pb <sub>50</sub> -----	11.331, 23°-----	" " "
BISMUTH AND ANTIMONY.		
Bi <sub>6</sub> Sb-----	9.435, 9° 4'-----	Holzmann. P. T. 1860, 177.
Bi <sub>5</sub> Sb-----	9.369 -----	Calvert and Johnson. J. 12, 120.
Bi <sub>4</sub> Sb-----	9.276 -----	" " "
"-----	9.277, 12° 1'-----	Holzmann. P. T. 1860, 177.
Bi <sub>3</sub> Sb-----	9.095 -----	Calvert and Johnson. J. 12, 120.
Bi <sub>2</sub> Sb-----	8.859 -----	" " "
"-----	8.886, 14°-----	Holzmann. P. T. 1860, 177.
Bi Sb-----	8.364 -----	Calvert and Johnson. J. 12, 120.
"-----	8.392, 11°-----	Holzmann. P. T. 1860, 177.
Bi Sb <sub>2</sub> -----	7.829 -----	Calvert and Johnson. J. 12, 120.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
BISMUTH AND ANTIMONY —continued.		
Bi Sb <sub>2</sub> .....	7.864, 9 <sup>o</sup> .4 .....	Holzmann. P. T. 1860, 177.
Bi Sb <sub>3</sub> .....	7.561 .....	Calvert and Johnson. J. 12, 129
Bi Sb <sub>4</sub> .....	7.370 .....	" "
Bi Sb <sub>5</sub> .....	7.271 .....	" "
IRON AND TIN.		
Fe Sn <sub>10</sub> . Cryst. furnace product.	7.534 .....	Rummelsberg.
Fe Sn <sub>12</sub> .....	7.446 .....	Noellner. J. 13, 183.
Fe <sub>3</sub> Sn .....	8.793 .....	Lassaigne.
IRON AND NICKEL.		
Awaruite. Ni <sub>2</sub> Fe .....	8.1 .....	Ulrich. N. J. 1888, 209.
COPPER AND ZINC.*		
Cu <sub>10</sub> Zn .....	8.605 .....	Mallet. D. J. 85, 378.
Cu <sub>9</sub> Zn .....	8.607 .....	" "
Cu <sub>8</sub> Zn .....	8.633 .....	" "
Cu <sub>7</sub> Zn .....	8.587 .....	" "
Cu <sub>6</sub> Zn .....	8.591 .....	" "
Cu <sub>5</sub> Zn .....	8.415 .....	" "
" .....	8.673 .....	Calvert and Johnson. J. 12, 120.
Cu <sub>4</sub> Zn .....	8.448 .....	Mallet. D. J. 85, 378.
" .....	8.650 .....	Calvert and Johnson. J. 12, 120
Cu <sub>3</sub> Zn .....	8.397 .....	Mallet. D. J. 85, 378.
" .....	8.576 .....	Calvert and Johnson. J. 12, 120.
Cu <sub>2</sub> Zn .....	8.299 .....	Mallet. D. J. 85, 378.
" .....	8.392 .....	Crocekwitt. J. 1, 394
" .....	8.488 .....	Calvert and Johnson. J. 12, 120.
Cu <sub>3</sub> Zn <sub>2</sub> .....	8.224 .....	Crocekwitt. J. 1, 394.
Cu Zn .....	8.230 .....	Mallet. D. J. 85, 378.
" .....	7.808 .....	Calvert and Johnson. J. 12, 120
Cu <sub>3</sub> Zn <sub>5</sub> .....	7.939 .....	Crocekwitt. J. 1, 394.
Cu Zn <sub>2</sub> .....	8.283 .....	Mallet. D. J. 85, 378.
" .....	7.859 .....	Calvert and Johnson. J. 12, 120
Cu <sub>8</sub> Zn <sub>17</sub> .....	7.721 .....	Mallet. D. J. 85, 378.
Cu <sub>4</sub> Zn <sub>12</sub> .....	7.836 .....	" "
Cu <sub>4</sub> Zn <sub>19</sub> .....	8.019 .....	" "
Cu <sub>8</sub> Zn <sub>20</sub> .....	7.603 .....	" "
Cu <sub>4</sub> Zn <sub>21</sub> .....	8.058 .....	" "
Cu <sub>4</sub> Zn <sub>22</sub> .....	7.882 .....	" "
Cu <sub>2</sub> Zn <sub>3</sub> .....	7.443 .....	" "
Cu Zn <sub>3</sub> .....	7.449 .....	" "
" .....	7.756 .....	Calvert and Johnson. J. 12, 120.
Cu Zn <sub>4</sub> .....	7.371 .....	Mallet. D. J. 85, 378.
" .....	7.445 .....	Calvert and Johnson. J. 12, 120
Cu Zn <sub>5</sub> .....	6.605 .....	Mallet. D. J. 85, 378.
" .....	7.442 .....	Calvert and Johnson. J. 12, 120

\* See also the Report of the U. S. Board on Testing Iron, Steel, and other Metals. Washington, Government Printing Office, 1881.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
COPPER AND TIN.		
Cu <sub>96</sub> Sn	8.564	Thurston's Report, 295.
Cu <sub>48</sub> Sn	8.649	" " "
Cu <sub>25</sub> Sn	8.820	Calvert and Johnson. J. 12, 120.
Cu <sub>24</sub> Sn	8.694	Thurston's Report, 295.
Cu <sub>20</sub> Sn	8.793	Calvert and Johnson. J. 12, 120.
Cu <sub>15</sub> Sn	8.825	" " "
"	8.84	Riche. J. 21, 270.
"	8.80	Riche. J. 23, 1100.
Cu <sub>12</sub> Sn	8.681	Thurston's Report, 295.
Cu <sub>10</sub> Sn	8.561	Mallet. D. J. 85, 378.
"	8.832	Calvert and Johnson. J. 12, 120.
"	8.87	Riche. J. 21, 270.
"	8.83	Riche. J. 23, 1100.
Cu <sub>9</sub> Sn	8.462	Mallet. D. J. 85, 378.
Cu <sub>8</sub> Sn	8.459	" " "
"	8.84	Riche. J. 21, 270.
"	8.86	Riche. J. 23, 1100.
Cu <sub>7</sub> Sn	8.728	Mallet. D. J. 85, 378.
"	8.72	Riche. J. 21, 270.
"	8.90	Riche. J. 23, 1100.
Cu <sub>6</sub> Sn	8.750	Mallet. D. J. 85, 378.
"	8.65	Riche. J. 21, 270.
"	8.91	Riche. J. 23, 1100.
"	8.565	Thurston's Report, 295.
Cu <sub>5</sub> Sn	8.575	Mallet. D. J. 85, 378.
"	8.965	Calvert and Johnson. J. 12, 120.
"	8.62	Riche. J. 21, 270.
"	8.87	Riche. J. 23, 1100.
Cu <sub>4</sub> Sn	8.400	Mallet. D. J. 85, 378.
"	8.948	Calvert and Johnson. J. 12, 120.
"	8.77	Riche. J. 21, 270.
"	8.80	Riche. J. 23, 1100.
"	8.938	Thurston's Report, 295.
Cu <sub>3</sub> Sn	8.539	Mallet. D. J. 85, 378.
"	8.954	Calvert and Johnson. J. 12, 120.
"	8.91	Riche. J. 21, 270.
"	8.96	Riche. J. 23, 1100.
"	8.970	Thurston's Report, 295.
Cu <sub>12</sub> Sn <sub>5</sub>	8.682	" " "
Cu <sub>2</sub> Sn	8.416	Mallet. D. J. 85, 378.
"	8.512	Croockewitt. J. 1, 394.
"	8.533	Calvert and Johnson. J. 12, 120.
"	8.15	Riche. J. 21, 270.
"	8.57	Riche. J. 23, 1100.
"	8.560	Thurston's Report, 295.
Cu <sub>12</sub> Sn <sub>7</sub>	8.442	" " "
Cu <sub>3</sub> Sn <sub>2</sub>	8.06	Riche. J. 21, 270.
"	8.30	Riche. J. 23, 1100.
"	8.312	Thurston's Report, 295.
Cu <sub>4</sub> Sn <sub>3</sub>	8.302	" " "
Cu <sub>6</sub> Sn <sub>5</sub>	8.182	" " "
Cu Sn	8.656	Mallet. D. J. 85, 378.
"	8.072	Croockewitt. J. 1, 394.
"	7.992	Calvert and Johnson. J. 12, 120.
"	7.90	Riche. J. 21, 270.
"	8.12	Riche. J. 23, 1100.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
COPPER AND TIN—continued.		
Cu Sn	8.013	Thurston's Report, 295.
Cu <sub>3</sub> Sn <sub>4</sub>	7.948	" " "
Cu <sub>3</sub> Sn <sub>5</sub>	7.835	" " "
Cu Sn <sub>2</sub>	7.387	Mallet. D. J. 85, 378.
" Cryst.	7.53	Miller. P. A. 120, 55.
"	7.538	Calvert and Johnson. J. 12, 120.
"	7.83	Riche. J. 21, 270.
"	7.74	Riche. J. 23, 1100.
"	7.770	Thurston's Report, 295.
Cu <sub>3</sub> Sn <sub>7</sub> , Furnace product.	6.994	Rammel-berg. P. A. 120, 54.
Cu <sub>2</sub> Sn <sub>5</sub>	7.652	Croockewitt. J. 1, 394.
Cu <sub>3</sub> Sn <sub>5</sub>	7.447	Mallet. D. J. 85, 378.
"	7.606	Calvert and Johnson. J. 12, 120.
"	7.14	Riche. J. 21, 270.
"	7.53	Riche. J. 23, 1100.
"	7.657	Thurston's Report, 295.
Cu Sn <sub>4</sub>	7.472	Mallet. D. J. 85, 378.
"	7.558	Calvert and Johnson. J. 12, 120.
"	7.31	Riche. J. 21, 270.
"	7.50	Riche. J. 23, 1100.
"	7.552	Thurston's Report, 295.
Cu Sn <sub>5</sub>	7.442	Mallet. D. J. 85, 378.
"	7.517	Calvert and Johnson. J. 12, 120.
"	7.28	Riche. J. 21, 270.
"	7.52	Riche. J. 23, 1100.
"	7.487	Thurston's Report, 295.
Cu Sn <sub>12</sub>	7.360	" " "
Cu Sn <sub>18</sub>	7.305	" " "
Cu Sn <sub>26</sub>	7.290	" " "
COPPER AND LEAD.		
Cu Pb	10.375	Croockewitt. J. 1, 394.
Cu <sub>2</sub> Pb <sub>3</sub>	10.753	" " "
COPPER AND ANTIMONY.		
Cu <sub>11</sub> Sb <sub>2</sub>	8.829	Laist and Norton. A. C. J. 10, 60
" Horsfordite	8.812	
Cu <sub>4</sub> Sb	8.871	Kamenski. P. M. (5), 17, 274
Cu <sub>2</sub> Sb <sub>3</sub>	8.339	" " "
Cu Sb	7.990	Calvert and Johnson. J. 12, 120.
COPPER AND BISMUTH.		
C. Bi	9.664	Calvert and Johnson. J. 12, 120
SILVER AND TIN.		
Ag <sub>4</sub> Sn	9.953, 11.78	Holzmann. P. T. 1860, 177.
Ag <sub>2</sub> Sn	9.567, 12.30	" " "
Ag Sn	8.828, 13.78	" " "
Ag Sn <sub>2</sub>	8.223, 16.33	" " "

\* Kamenski gives data for seventeen other Cu-Sb alloys.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
SILVER AND TIN—continued.		
Ag Sn <sub>3</sub> -----	7.936, 19°.3 -----	Holzmann. P. T. 1860, 177.
Ag Sn <sub>5</sub> -----	7.551, 18°.8 -----	" "
Ag Sn <sub>6</sub> -----	7.666, 18°.4 -----	" "
Ag Sn <sub>18</sub> -----	7.421, 18°.6 -----	" "
SILVER AND LEAD.		
Ag <sub>4</sub> Pb -----	10.800, 13°.5 -----	Matthiessen. P. T. 1860, 177.
Ag <sub>3</sub> Pb -----	10.925, 13°.8 -----	" "
Ag Pb -----	10.054, 12°.5 -----	" "
Ag Pb <sub>2</sub> -----	11.144, 18°.2 -----	" "
Ag Pb <sub>4</sub> -----	11.196, 21° -----	" "
Ag Pb <sub>10</sub> -----	11.285, 22°.2 -----	" "
Ag Pb <sub>25</sub> -----	11.334, 20°.6 -----	" "
SILVER AND COPPER.*		
Ag <sub>3</sub> Cu <sub>2</sub> -----	9.9045 -----	Levol. J. 5, 768.
" Solid -----	9.9045 -----	Roberts. C. N. 31, 143.
" Molten -----	9.0554 -----	
GOLD AND TIN.		
Au <sub>4</sub> Sn -----	16.367, 15°.4 -----	Holzmann. P. T. 1860, 177.
Au <sub>2</sub> Sn -----	14.244, 14°.2 -----	" "
Au Sn -----	11.833, 14°.6 -----	" "
Au <sub>2</sub> Sn <sub>3</sub> -----	10.794, 23°.6 -----	" "
Au Sn <sub>2</sub> -----	10.168, 23°.7 -----	" "
Au <sub>2</sub> Sn <sub>5</sub> -----	9.715, 22°.4 -----	" "
Au Sn <sub>3</sub> -----	9.405, 23°.7 -----	" "
Au Sn <sub>4</sub> -----	8.931, 25°.6 -----	" "
Au Sn <sub>6</sub> -----	8.470, 23°.1 -----	" "
Au Sn <sub>9</sub> -----	8.118, 22°.4 -----	" "
Au Sn <sub>15</sub> -----	7.801, 22°.8 -----	" "
Au Sn <sub>50</sub> -----	7.411, 22°.9 -----	" "
GOLD AND LEAD.		
Au <sub>4</sub> Pb -----	17.013, 14°.3 -----	Matthiessen. P. T. 1860, 177.
Au <sub>2</sub> Pb -----	15.603, 14°.5 -----	" "
Au Pb -----	14.466, 14°.3 -----	" "
Au Pb <sub>2</sub> -----	13.306, 22°.1 -----	" "
Au Pb <sub>3</sub> -----	12.737, 21°.3 -----	" "
Au Pb <sub>4</sub> -----	12.445, 21°.6 -----	" "
Au Pb <sub>5</sub> -----	12.274, 19°.4 -----	" "
Au Pb <sub>10</sub> -----	11.841, 23°.3 -----	" "
GOLD AND BISMUTH.		
Au <sub>2</sub> Bi -----	14.844, 16° -----	Holzmann. P. T. 1860, 177.
Au Bi -----	13.403, 16°.5 -----	" "
Au Bi <sub>2</sub> -----	12.067, 16° -----	" "
Au Bi <sub>4</sub> -----	11.025, 23° -----	" "

\* See Karmarsch, Beiblätter 2, 194, for sixteen Ag Cu alloys.

ALLOY.	SPECIFIC GRAVITY.	AUTHORITY.
GOLD AND BISMUTH— continued.		
Au Bi <sub>20</sub> -----	19.452, 21.34-----	Holzmann. P. T. 1830, 177.
Au Bi <sub>40</sub> -----	19.076, 21.37-----	" " " "
Au Bi <sub>60</sub> -----	9.942, 21.32-----	" " " "
Au Bi <sub>80</sub> -----	9.872, 21.3-----	" " " "
GOLD AND COPPER.		
Au <sub>6</sub> Cu-----	17.9340-----	Roberts. Bel. 2, 327.
Au <sub>3</sub> Cu-----	17.1653-----	" " " "
Au <sub>2</sub> Cu-----	16.4832-----	" " " "
GOLD AND SILVER.		
Au <sub>6</sub> Ag-----	18.041, 133.1-----	Matthiessen. P. T. 1869, 177.
Au <sub>4</sub> Ag-----	17.540, 123.3-----	" " " "
Au <sub>2</sub> Ag-----	16.354, 133-----	" " " "
Au Ag-----	14.879, 133-----	" " " "
Au Ag <sub>2</sub> -----	13.432, 143.3-----	" " " "
Au Ag <sub>4</sub> -----	12.257, 143.7-----	" " " "
Au Ag <sub>6</sub> -----	11.760, 133.1-----	" " " "
PALLADIUM AND LEAD.		
Pd <sub>3</sub> Pb-----	11.225-----	Bauer. J. 24, 317.
PLATINUM AND LEAD.		
Pt Pb-----	15.77-----	Bauer. Z. C. 14, 48.
IRIDIUM AND OSMIUM.		
Ir Os. Newjanskite-----	19.384—19.471-----	Berzelius. Dana's Min.
Ir Os <sub>4</sub> . Sisserskite-----	21.118-----	" " " "
TRIPLE ALLOYS.*		
Cd Pb <sub>2</sub> Bi <sub>4</sub> -----	10.503-----	v. Hauer. J. 18, 236.
Cd <sub>2</sub> Pb <sub>2</sub> Bi <sub>4</sub> -----	10.732-----	" " " "
Pb Sn <sub>2</sub> Bi <sub>4</sub> -----	9.194, 11-----	Regnault. P. A. 53, 67.
Pb Sn <sub>2</sub> Bi <sub>2</sub> -----	9.253, 20-----	" " " "
Pb <sub>4</sub> Sn <sub>6</sub> Bi <sub>4</sub> . Rose's alloy-----	9.5125, 4-----	Spring. Ann. (5), 7, 196.
Pb <sub>4</sub> Sn <sub>10</sub> Bi <sub>12</sub> . Darcot's "-----	9.6491, 4-----	" " " "
Sn <sub>2</sub> Sb Bi-----	7.883, 20-----	Regnault. P. A. 53, 67.
Cu <sub>2</sub> Ni Sb <sub>2</sub> . Furnace prod- uct-----	8.004-----	Sandberger. J. 11, 202.
QUADRUPLE ALLOYS.		
Cd Sn Pb Bi-----	9.795-----	v. Hauer. J. 18, 236.
Cd Sn <sub>2</sub> Pb Bi <sub>4</sub> -----	9.784-----	" " " "
Cd <sub>2</sub> Sn <sub>2</sub> Pb Bi <sub>4</sub> . Wood's alloy-----	9.1109, 4-----	Spring. Ann. (5), 7, 196.
Cd Sn <sub>4</sub> Pb <sub>4</sub> Bi <sub>4</sub> -----	9.725-----	v. Hauer. J. 18, 233.
Cd <sub>4</sub> Sn <sub>4</sub> Pb <sub>4</sub> Bi <sub>16</sub> -----	9.685-----	" " " "
Cd <sub>4</sub> Sn <sub>4</sub> Pb <sub>4</sub> Bi <sub>16</sub> . Lique- witz alloy-----	9.7244, 4-----	Spring. Ann. (5), 7, 196.

\* For the triple alloys of Cu Sn Zn see Thurston's Report. For many amalgams see Joule, J. C. S., vol. 16, 1863. For alloys of platinum and gold see Princip, P. T. 1828.

## XLV. HYDROCARBONS.

1st. Paraffins.  $C_n H_{2n+2}$ .

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methane. Liquefied -----	$C H_4$ -----	.37 -----	Wroblevsky. C. R. 99, 136.
“ “ -----	“ -----	.414 -----	{ Olszewski. P. A. (2), 31, 73.
“ “ -----	“ -----	.415 -----	
“ “ -----	“ -----	.416 -----	
Propane -----	$C_3 H_8$ -----	.613, $-25^\circ$ -----	Lefebvre. J. 21, 329.
Butane -----	$C_4 H_{10}$ -----	.600, $0^\circ$ -----	Pelouze and Cahours. J. 16, 524.
“ -----	“ -----	.600, $0^\circ$ -----	Ronalds. J. 18, 507.
“ -----	“ -----	.624, $-1^\circ$ -----	Lefebvre. J. 21, 329.
Normal pentane. (B. $39^\circ$ ) -----	$C_5 H_{12}$ -----	.636, $17^\circ$ -----	Schorlemmer. J. 15, 386.
“ “ -----	“ -----	.6263, $17^\circ$ -----	Schorlemmer. J. 19, 527.
“ “ -----	“ -----	.626, $14^\circ$ -----	Cahours and Demarcay. C. R. 80, 1569.
“ “ -----	“ -----	.6267, $14^\circ$ -----	Lachowicz. A. C. P. 220, 191.
“ “ -----	“ -----	.624, $11^\circ.5$ -----	Gladstone. Bei. 9, 249.
“ “ -----	“ -----	.6323, $17^\circ$ -----	Norton and Andrews. A. C. J. 8, 7.
Isopentane. (B. $30^\circ$ ) -----	“ -----	.6415, $11^\circ.2$ -----	Frankland. J. 3, 481.
“ -----	“ -----	.6385, $14^\circ.2$ -----	
“ -----	“ -----	.628, $18^\circ$ -----	Pelouze and Cahours. J. 16, 527.
“ -----	“ -----	.6375, $13^\circ$ -----	Just. A. C. P. 220, 153.
“ -----	“ -----	.6282, $13^\circ.7$ -----	Schiff. G. C. I, 13, 177.
“ -----	“ -----	.6132, $30^\circ.5$ -----	
“ -----	“ -----	.6402, $0^\circ$ -----	Bartolli and Stracciati. Bei. 9, 697.
“ -----	“ -----	.6111, $30^\circ$ -----	
Normal hexane. (B. $69^\circ$ ) -----	$C_6 H_{14}$ -----	.6745, $18^\circ$ -----	Williams. J. 10, 418.
“ “ -----	“ -----	.669, $16^\circ$ -----	Pelouze and Cahours. J. 15, 410.
“ “ -----	“ -----	.678, $15^\circ.5$ -----	Schorlemmer. J. 15, 386.
“ “ -----	“ -----	.6617, $17^\circ.5$ -----	Dale. J. 17, 381.
“ “ -----	“ -----	.6645, $16^\circ.5$ -----	Wanklyn and Erlemeyer. J. 16, 521.
“ “ -----	“ -----	.6630, $17^\circ$ -----	Schorlemmer. A. C. P. 161, 263.
“ “ -----	“ -----	.689, $0^\circ$ -----	Warren. J. 21, 330.
“ “ -----	“ -----	.6641, $18^\circ$ -----	Thorpe and Young. A. C. P. 165, 1.
“ “ -----	“ -----	.6620, $19^\circ.5$ -----	
“ “ -----	“ -----	.667, $13^\circ$ -----	Cahours and Demarcay. C. R. 80, 1570.
“ “ -----	“ -----	.6199, $60^\circ.8$ -----	Ramsay. J. C. S. 35, 463.

NAME.	FORMULA.	SF. GRAVITY.	AUTHORITY.
Normal hexane.	$C_6H_{14}$	.6753, 0°	Zander, A. C. P.
" "	"	.6729, 69°	214, 181.
" "	"	.6785, 14°	Lachowicz, A. C.
" "	"	.6681, 102.8	P. 220, 192.
" "	"	.6712, 68°	Schiff, G. C. J. 13,
" "	"	.6743, 68°	177.
" "	"	.6603, 20°	Bruhl, A. C. P. 200,
" "	"	.6750, 0°	183.
" "	"	.6743, 68°	Bartoli and Strac-
" "	"	.6745, 18°	ciati, <i>Bel.</i> 9, 697.
			Norton and An-
			drews, A. C. J.
			8, 7.
Isohexane, (B. 62°)	"	.7011, 0°	Wurtz, J. 8, 576.
" "	"	.676, 0	Warren, J. 21, 339.
Hexane, B. 48°—62°	"	.6717, 25°	Gladstone, <i>Bel.</i> 9,
" B. 53°—60°	"	.6713, 25°	249.
Methyl-diethyl-methane,	"	.6765, 20°	Willicens, A. C.
(B. 64°)	"	.6769, 10°	P. 219, 315.
Tetramethyl-ethane, or	"	.6791, 17°	Schorlemmer, J. 20,
diisopropyl, (B. 58°)	"	.6599, 29°	
" "	"	.668, 0	
" "	"	.6829, 0°	Riche, <i>Ann.</i> 6, 59,
" "	"	.6786, 58°	426.
Hexane from suberic acid,	"	.671, 20°	Zander, A. C. P.
B. 78°	"		214, 181.
Normal heptane, (B. 98°)	$C_7H_{16}$	.709, 17°	Riche, <i>Ann.</i> (6), 59,
From coal oil.	"	.7122, 16°	426.
" " petroleum	"	.6851, 17°	Schorlemmer, J. 15,
" " " " " "	"	.6840, 20°	386.
" " " " " "	"	.7085, 0°	Schorlemmer, J. 16,
" " " " " "	"	.691, 12°	532.
" " " " " "	"	.6967, 19°	Dale, J. 17, 381.
" " " " " "	"	.6915, 18°	Schorlemmer and
" " " " " "	"	.6910, 19°	Dale, A. C. P.
" " " " " "	"	.694	136, 269.
" " " " " "	"	.70048, 0°	Warren and Storer,
" " " " " "	"	.7138, 98°	J. 21, 331.
" " " " " "	"	.7176, 20	Cadours and Demar-
" " " " " "	"	.7291, 20°	qay, C. R. 80, 1570
" " " " " "	"	.7023, 14°	Beilstein and Kur-
" " " " " "	"		batow, <i>Ber.</i> 13,
" " " " " "	"		2028.
" " " " " "	"		Thorpe and Young,
" " " " " "	"		A. C. P. 165, 1.
" " " " " "	"		Wenzell, C. N. 39,
" " " " " "	"		182.
" " " " " "	"		Thorpe, J. C. S.
" " " " " "	"		37, 371.
" " " " " "	"		Lachowicz, A. C. P.
" " " " " "	"		220, 193.
" " " " " "	"		Lachowicz, A. C. P.
" " " " " "	"		220, 203.
" " " " " "	"		Lachowicz, A. C. P.
" " " " " "	"		220, 204

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isoheptane*, ethyl-amyl, or dimethyl-butyl-me- thane. (B. 90°.3.)	$C_7H_{16}$ -----	.7069, 0° ----	Wurtz. J. 8, 576.
“ “ -----	“ -----	.6819, 17°.5 } -----	Schorlemmer. A. C.
“ “ -----	“ -----	.6795, 20° } -----	P. 136, 259.
“ “ -----	“ -----	.6783, 19° ----	Schorlemmer. A. C.
“ “ -----	“ -----	.7259, 0° ----	P. 136, 264.
“ “ -----	“ -----	.7148, 15° ----	Schorlemmer. A. C.
“ “ -----	“ -----	.6999, 32° ----	P. 136, 269. From
“ “ -----	“ -----	.6867, 48° ----	petroleum.
“ “ -----	“ -----	.6833, 18°.4 ----	Grimshaw. A. C. P.
“ “ -----	“ -----	.69692, 0° ----	166, 163.
“ “ -----	“ -----	.61606, 90°.3 ----	} Thorpe. J. C. S.
“ “ -----	“ -----	.6060, 91° ----	} 37, 371.
			Ramsay. J. C. S. 35,
			463.
Methyl-ethyl-propyl-me- thane. (B. 91°.)	“ -----	.6895, 20° ----	Just. A. C. P. 220,
Triethyl-methane. (B.96°)	“ -----	.689, 27° ----	155.
			Ladenburg. B. S. C.
			18, 548.
Dimethyl-diethyl-me- thane. (B. 86°—87°.)	“ -----	.7111, 0° ----	{ Friedel and Laden-
“ From petroleum	“ -----	.6958, 20°.5 } -----	burg. J. P. C.
			101, 315.
		.709, 16° ----	Schorlemmer. A. C.
			P. 166, 172.
Heptane from petroleum	“ -----	.7328, 0° ----	{ Bartoli and Strac-
“ (B. 92°—94°)	“ -----	.6473, 92°—94°	
“ “ -----	“ -----	.7303, 0° ----	
“ “ -----	“ -----	.6462, 92°—94°	
Normaloctane. (B. 125°.5)	$C_8H_{18}$ -----	.6945, 18° ----	Williams. J. 10,
“ “ -----	“ -----	.7083, 12°.5 ----	418.
“ “ -----	“ -----	.7032, 17° ----	Schorlemmer.
“ “ -----	“ -----	.723, 0° } -----	Schorlemmer. A. C.
“ “ -----	“ -----	.721, 10° } -----	P. 161, 263.
“ “ -----	“ -----	.719, 17°.5 ----	Riche. J. 13, 248.
“ “ -----	“ -----	.726, 15° ----	Schorlemmer. J. 15,
“ “ -----	“ -----	.728, 0° ----	386.
“ “ -----	“ -----	.7207, 15°.5 } -----	Pelouze and Cahours.
“ “ -----	“ -----	.7165, 15°.6 } -----	J. 16, 524.
“ “ -----	“ -----	.723, 13° ----	Wurtz. J. 16, 509.
“ “ -----	“ -----	.71883, 0° ----	{ Thorpe and Young.
“ “ -----	“ -----	.61077, 125°.46 } -----	Two lots. A. C.
“ “ From co- nicin.	“ -----	.712, 11° ----	P. 165, 1.
			Cahours and Demar-
			cay. C. R. 80, 1571.
			} Thorpe. J. C. S.
			} 37, 371.
			Hofmann. Ber. 18,
			13.
Tetramethyl-butane, or diisobutyl. (B. 108°.53.)	“ -----	.6940, 18° ----	Kolbe. J. 1, 559.
“ “ -----	“ -----	.7057, 0° ----	Wurtz. J. 8, 576.
“ “ -----	“ -----	.7135, 0° ----	Kopp. A. C. P. 95,
“ “ -----	“ -----	.7001, 16°.4 ----	307.

\* For a mixture of heptane and isoheptane from petroleum, B. 92°—94°, Pelouze and Cahours give a sp. g. of .699, 16°.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tetramethyl-butane, or diisobutyl. (B. 108-53.)	$C_6H_{14}$	.7091, 0°	Williams, J. C. S. 35, 125.
"	"	.7085, 6°	
"	"	.7015, 10°	
"	"	.6934, 20°	
"	"	.686, 30°	
"	"	.677, 40°	
"	"	.669, 50°	
"	"	.626, 100°	
"	"	.608, 162.5°	
"	"	.6712, 49°	Schorlemmer, J. 20, 567.
"	"	.7111, 0°	Thorpe, J. C. S. 37, 371.
"	"	.61549, 108°-53	Schiff, G. C. I. 13, 177.
"	"	.7001, 12°-1	
"	"	.6166, 107°-8	
"	"	.6167, 1	
Octane from petroleum. (B. 121°.)	"	.732, 12°	Lemoine, B. S. C. 41, 161.
" " " (B. 116°)	"	.7463, 0°	Bartoli and Strac- ciati, <i>Bel.</i> 9, 697.
" " " (B. 118°)	"	.6596, 116°-118°	
Normal nonane. (B. 149°)	$C_9H_{20}$	.741	Pelouze and Ca- hours.* J. 16, 524.
" " "	"	.744, 13°	Caours and Demar- guy.* C. R. 80, 1571.
" " "	"	.7279, 13°-5	Thorpe and Young, A. C. P. 165, 1.
" " "	"	.7330, 0°	Kraft, <i>Ber.</i> 15, 1687.
" " "	"	.7228, 13°-5	
" " "	"	.7217, 15°	
" " "	"	.7177, 20°	
" " "	"	.6541, 90°-1	
" " "	"	.7124, 21°	Lachowicz, A. C. P. 220, 194.
" " (B. 136°)	"	.742, 12°	Lemoine,* B. S. C. 41, 161.
" " (B. 130°)	"	.743, 0°	" "
" " "	"	.734, 12°-7	
" " "	"	.731, 16°	
" " "	"	.725, 24°	
" " (B. 136°)	"	.7623, 0°	Bartoli and Strac- ciati,* <i>Bel.</i> 9, 697.
" " (—138°.)	"	.6492, 136-138°	
Tetramethyl-pentane, or butyl-amyl. (B. 132.)	"	.7247, 0°	Wurtz, J. 8, 570.
Normal decane. (B. 167°)	$C_{10}H_{22}$	.7394, 13°-5	Thorpe and Young, A. C. P. 165, 1.
" " (B. 170°)	"	.7562, 15°	Jacobson, A. C. P. 184, 202.
" " "	"	.7516, 22°	
" " (B. 173°)	"	.7456, 0°	Kraft, <i>Ber.</i> 15, 1687.
" " "	"	.7452, 0°	
" " "	"	.7342, 15°	
" " "	"	.7304, 20°	
" " "	"	.6690, 90°-3	Lachowicz, A. C. P. 220, 180.
" " "	"	.73097, 18°	
Diisomyl. (B. 155°)	"	.7704, 11°	Frankland, J. 3, 179.

\* Preparations from petroleum, boiling at 130° to 170°, and doubtless containing admixed isomers

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Diisomyl. (B. 158°) ----	$C_{10}H_{22}$ ----	.7413, 0°	Wurtz. J. 8, 573.
" (B. 159°) ----	" ----	.7282, 20°	
" (B. 156°) ----	" ----	.7365, 18°	Williams. J. 10, 418.
" (B. 159°.4) ----	" ----	.753, 0°	Wurtz. J. 16, 510.
" (B. 160°) ----	" ----	.7358, 9°.8	Schiff. G. C. I. 13, 177.
" (B. 157°.1) ----	" ----	.6126, 159°.4	
" (B. 160°) ----	" ----	.7463, 22°	Just. A. C. P. 220, 156.
" (B. 157°.1) ----	" ----	.72156, 22°	Lachowicz. A. C. P. 220, 172.
Decane. (B. 160°) ----	" ----	.757, 16°	Pelouze and Cahours.* J. 16, 524.
" (B. 159°) ----	" ----	.758, 14°	Cahours and Demarcay.* C. R. 80, 1571.
" (B. 155°—160°) ----	" ----	.760	Cloez.† C. R. 85, 1003.
" (B. 162°—163°) ----	" ----	.7324, 20°	Lachowicz.‡ A. C. P. 220, 195.
" (B. 152°—153°) ----	" ----	.7187, 21°	
" ----	" ----	.764, 0°	Lemoine.* B. S. C. 41, 161.
" ----	" ----	.753, 15°.6	
" ----	" ----	.751, 17°	
" ----	" ----	.739, 33°.5	
" ----	" ----	.7711, 0°	} Bartoli and Strac- ciati.* Bei. 9, 697.
" ----	" ----	.6475, 158—162°	
Undecane. (B. 181°) ----	$C_{11}H_{24}$ ----	.766	Pelouze and Cahours.* J. 16, 524.
" (B. 177°) ----	" ----	.770, 14°	Cahours and Demarcay.* C. R. 80, 1571.
" (B. 179°) ----	" ----	.769	Cloez.† C. R. 85, 1003.
" (B. 180°—182°) ----	" ----	.7816, 0°	} Bartoli and Strac- ciati.* Bei. 9, 697.
" " ----	" ----	.6448, 180—182°	
Normal undecane. (B. 194°.5.)	" ----	.7560, 0°	Krafft. Ber. 15, 1687. Melts at —26°.5.
" " ----	" ----	.7557, 0°	
" " ----	" ----	.7448, 15°	
" " ----	" ----	.7411, 20°	
" " ----	" ----	.6816, 99°	Wurtz. J. 8, 576.
Dodecane. (B. 202°) ----	$C_{12}H_{26}$ ----	.7574, 0°	
" (B. 198°) ----	" ----	.7568, 18°	Williams. J. 10, 418.
" (B. 200°) ----	" ----	.778, 20°	Pelouze and Cahours.* J. 16, 524.
" (B. 196°.5) ----	" ----	.784, 14°	Cahours and Demarcay.* C. R. 80, 1571.
" (B. 201°) ----	" ----	.782	Cloez.† C. R. 85, 1003.
" (B. 198°—200°) ----	" ----	.7738, 17°	Schorlemmer. A. C. P. 161, 263.
" " ----	" ----	.7915, 0°	} Bartoli and Strac- ciati.* Bei. 9, 697.
" " ----	" ----	.6442, 198—200°	
Normal dodecane. (B. 214°.5)	" ----	.7655, 0°	Krafft. Ber. 15, 1687.
" " ----	" ----	.7548, 15°	
" " ----	" ----	.7511, 20°	
" " ----	" ----	.6930, 99°.1	

\* From petroleum. Doubtless a mixture of isomers.

† From hydrogen evolved from cast iron. Constitution undetermined.

‡ Two isomers from Gabcian petroleum. Constitution undetermined.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tridecane. (B. 219 <sup>o</sup> )	C <sub>13</sub> H <sub>28</sub>	.796, 17 <sup>o</sup>	Pelouze and Cahours,* J. 16, 524.
" (B. 217.5)	"	.793	Cloez.† C. R. 85, 1003.
" (B. 218 <sup>o</sup> -220 <sup>o</sup> )	"	.8016, 0 <sup>o</sup>	} Bartoli and Stracchiati,* Bei. 9, 697.
Normal tridecane. (B. 234 <sup>o</sup> )	"	.7716, 0 <sup>o</sup>	
" " "	"	.7713, 0 <sup>o</sup>	} Kraft. Ber. 15, 1687.
" " "	"	.7608, 15 <sup>o</sup>	
" " "	"	.7571, 20 <sup>o</sup>	
" " "	"	.7608, 99 <sup>o</sup>	
Tetradecane. (B. 238 <sup>o</sup> )	C <sub>14</sub> H <sub>30</sub>	.809, 20 <sup>o</sup>	Pelouze and Cahours,* J. 16, 524.
" (B. 236 <sup>o</sup> )	"	.812	Cloez.† C. R. 85, 1003.
" (B. 236 <sup>o</sup> -240 <sup>o</sup> )	"	.8129, 0 <sup>o</sup>	} Bartoli and Stracchiati,* Bei. 9, 697.
" " "	"	.8112, 236-240 <sup>o</sup>	
Normal tetradecane.	"	.7753, 0 <sup>o</sup>	} Kraft. Ber. 15, 1687. Melts at 4 <sup>o</sup> .5.
" " (B. 252.5)	"	.7750, 5 <sup>o</sup>	
" " "	"	.7715, 10 <sup>o</sup>	
" " "	"	.7681, 15 <sup>o</sup>	
" " "	"	.7645, 20 <sup>o</sup>	
" " "	"	.7687, 99 <sup>o</sup> .2	
" " "	"	.7738, 53.4	Kraft. Ber. 19, 2218.
Pentadecane. (B. 260 <sup>o</sup> )	C <sub>15</sub> H <sub>32</sub>	.825, 19 <sup>o</sup>	Pelouze and Cahours,* J. 16, 524.
" (B. 258 <sup>o</sup> )	"	.830	Cloez.† C. R. 85, 1003.
" (B. 258 <sup>o</sup> -262 <sup>o</sup> )	"	.8224, 0 <sup>o</sup>	} Bartoli and Stracchiati,* Bei. 9, 697.
" " "	"	.8385, 258-262 <sup>o</sup>	
Normal pentadecane.	"	.7757, 10 <sup>o</sup>	} Kraft. Ber. 15, 1687. Melts at 10 <sup>o</sup> .
" " (B. 270.5)	"	.7759, 10 <sup>o</sup>	
" " "	"	.7724, 15 <sup>o</sup>	
" " "	"	.7689, 20 <sup>o</sup>	
" " "	"	.7736, 99 <sup>o</sup> .3	
Hexadecane, dioctyl, or diisooctyl. (B. 278 <sup>o</sup> )	C <sub>16</sub> H <sub>34</sub>	.850	Cloez.† C. R. 85, 1003.
" " "	"	.7438, 15 <sup>o</sup>	Eichler. Ber. 12, 1882.
" (B. 268.5)	"	.8022, 0 <sup>o</sup>	Abich. Ber. 16, 1225.
" (B. 264)	"	.80014, 18 <sup>o</sup>	Ludowicz. A. C. P. 220, 187.
" (B. 278-282 <sup>o</sup> )	"	.8287, 0 <sup>o</sup>	} Bartoli and Stracchiati,* Bei. 9, 697.
" " "	"	.8396, 278-282 <sup>o</sup>	
Normal hexadecane.	"	.7754, 18	} Kraft. Ber. 15, 1687. Melts at 18.
" " (B. 287.5)	"	.7742, 20 <sup>o</sup>	
" " "	"	.7707, 25 <sup>o</sup>	
" " "	"	.7797, 99 <sup>o</sup>	
" " "	"	.7754, 14.2	
Heptadecane. (B. 303)	C <sub>17</sub> H <sub>36</sub>	.774, 22.5	} Kraft. Ber. 15, 1687. Melts at 22.5.
" " "	"	.7767, 22.5	
" " "	"	.7749, 25	
" " "	"	.7714, 308	
" " "	"	.7745, 99 <sup>o</sup>	

\* From petroleum. Probably a mixture of isomers.

† From hydrogen evolved from cast iron. Constitution undetermined.

‡ All of Kraft's paraffins are said to belong to the normal series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Octadecane. (B. 317°)---	C <sub>18</sub> H <sub>38</sub> -----	.7768, 28°-----	Krafft. Ber. 15, 1687. Melts at 28°.
"-----	"-----	.7754, 30°-----	
"-----	"-----	.7719, 35°-----	
"-----	"-----	.7685, 40°-----	
"-----	"-----	.7288, 99°-----	
"-----	"-----	.7766, 28°-----	Krafft. Ber. 19, 2218.
Nondecane. (B. 330°)---	C <sub>19</sub> H <sub>40</sub> -----	.7774, 32°-----	
"-----	"-----	.7754, 35°-----	Krafft. Ber. 15, 1687. Melts at 32°.
"-----	"-----	.7720, 40°-----	
"-----	"-----	.7323, 99° 3	
Eicosane. (M. 36° 7)---	C <sub>20</sub> H <sub>42</sub> -----	.7779, 36° 7	
"-----	"-----	.7487, 80° 2	Krafft. Ber. 15, 1711.
"-----	"-----	.7363, 99° 2	
"-----	"-----	.7776, 36° 7	Krafft. Ber. 19, 2218.
Heneicosane. (M. 40° 4)---	C <sub>21</sub> H <sub>44</sub> -----	.7783, 40° 4	
"-----	"-----	.7557, 74° 7	Krafft. Ber. 15, 1711.
"-----	"-----	.7400, 98° 9	
Docosane. (M. 44° 4)---	C <sub>22</sub> H <sub>46</sub> -----	.7782, 44° 4	" "
"-----	"-----	.7549, 79° 6	
"-----	"-----	.7422, 99° 2	
Tricosane. (M. 47° 7)---	C <sub>23</sub> H <sub>48</sub> -----	.7785, 47° 7	" "
"-----	"-----	.7570, 80° 8	
"-----	"-----	.7456, 98° 8	
Tetracosane. (M. 51° 1)---	C <sub>24</sub> H <sub>50</sub> -----	.7786, 51° 1	" "
"-----	"-----	.7628, 76°-----	
"-----	"-----	.7481, 98° 9	
Heptacosane. (M. 59° 5)---	C <sub>27</sub> H <sub>56</sub> -----	.7796, 59° 5	" "
"-----	"-----	.7659, 80° 8	
"-----	"-----	.7545, 99°-----	
Hentriacontane. (M. 68° 1)---	C <sub>31</sub> H <sub>64</sub> -----	.7808, 68° 1	" "
"-----	"-----	.7730, 80° 8	
"-----	"-----	.7619, 98° 8	
Dotriacontane. (M. 70°)---	C <sub>32</sub> H <sub>66</sub> -----	.7810, 70°-----	Krafft. Ber. 19, 2218.
Pentatriacontane.	C <sub>35</sub> H <sub>72</sub> -----	.7816, 74° 7	Krafft. Ber. 15, 1711.
"-----	"-----	.7775, 80° 8	
"----- (M. 74° 7)	"-----	.7664, 99° 2	
Paraffin.* M. 56°	C <sub>n</sub> H <sub>2n+2</sub> -----	.913-----	From ozokerite. Sauerlandt. J. 1879, 1147.
" M. 61°	"-----	.921-----	
" M. 67°	"-----	.927-----	
" M. 72°	"-----	.934-----	
" M. 76°	"-----	.940-----	
" M. 82°	"-----	.943-----	
" M. 38°	"-----	.872, 17°-----	
" "-----	"-----	.879, 55°-----	
" M. 43°	"-----	.883, 17°-----	
" "-----	"-----	.788, 55°-----	
" "-----	"-----	.889, 17°-----	Albrecht. D. J. 218, 280.
" "-----	"-----	.785, 55°-----	
" M. 46°	"-----	.887, 17°-----	
" "-----	"-----	.781, 60°-65°	
" M. 47°	"-----	.900, 17°-----	
" "-----	"-----	.775, 60°-65°	
" M. 51°	"-----	.908, 17°-----	
" "-----	"-----	.775, 60°-65°	
" M. 56°	"-----	.912, 17°-----	
" "-----	"-----	.777, 60°-65°	

\* No attempt has been made to secure completeness concerning the specific gravity of common paraffin. The data given are included only to facilitate comparison.

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Paraffin. M. 381	$C_n H_{2n+2}$	.874, 21°	From shale oil. Beilby, J. C. S., Sept., 1883, 388. Data given for sp. g. of paraffin in solution.
"	"	.783, 38°	
"	"	.779, 43°	
"	"	.775, 49°	
"	"	.771, 54°	
"	"	.767, 60°	
"	"	.763, 65°	

2d. Olefines.  $C_n H_{2n}$ .

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Ethylene. Liquefied	$C_2 H_4$	.414, -21°	Cailliet and Ma- thies. C. R. 102, 1202.
"	"	.342, -7°	
"	"	.353, -3°	
"	"	.332, -4°	
"	"	.306, -6°	
Butylene	$C_4 H_8$	.739, 0°	Chapman, J. 20, 581.
"	"	.635, -13°	Puchot, Ann. (5),
"	"	.639, -14°	28, 207.
Amylene	$C_5 H_{10}$	.6517, 16°	Mendelejeff, J. 13, 7.
"	"	.6633, 0°	Bauer, J. 14, 660.
"	"	.66277, 0°	
"	"	.65490, 10°	
"	"	.64450, 17°	
"	"	.62384, 33°	Buff, A. C. P. 4
"	"	.625812, 33°	Supp. Bd., 129.
"	"	.62634, 35°	
"	"	.679, 0°	Buff, J. 21, 334.
"	"	.6319, 35°	Ramsay, J. C. S. 35, 463.
"	"	.6617, 9°	
"	"	.6340, 35°	Schiff, G. C. L. 13,
"	"	.6356, 36°	187.
"	"	.6503, 21°	Gladstone, Bei. 9, 249.
Trimethyl ethylene	"	.6783, 0°	Le Bel, B. S. C. 25, 547.
β. Ethyl methyl ethylene	"	.670, 0°	Le Bel, B. S. C. 25, 546.
Isopropyl ethylene	"	.648, 0°	Flawitzky, Ber. 11, 992.
Hexylene	$C_6 H_{12}$	.709, 12°	Pelouze and Ca- hours, J. 16, 526.
"	"	.6937	Wurtz, J. 17, 512.
"	"	.6986	
"	"	.702, 0°	Geibel and Buff, J. 21, 336.
"	"	.6996	Hecht, A. C. P. 165, 146.
"	"	.6997	
Tetramethyl ethylene	"	.712	Pawlow, A. C. P. 196, 122.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
<i>a.</i> Ethyl dimethyl ethylene. " " "	$C_6H_{12}$ -----	.712, 0° -----	Jawein. Ber. 11, 1258.
" " " "	" -----	.698, 19° -----	
<i>β.</i> Ethyl dimethyl ethylene. " " "	" -----	.702, 0° -----	" "
" " " "	" -----	.687, 19° -----	
Heptylene -----	$C_7H_{14}$ -----	.718, 18° -----	Williams. J. 11, 438.
" -----	" -----	.7060, 12° 5' -----	Schorlemmer. A. C. P. 136, 257.
" -----	" -----	.7026, 19° 5' -----	" "
" -----	" -----	.7060, 16° -----	Grimshaw. A. C. P. 166, 163.
" -----	" -----	.742, 20° -----	Renard. Ber. 15, 2368.
" -----	" -----	.71812, 20° -----	Sokolow. Ber. 21, ref. 56.
Dimethyl isopropyl ethylene. " " " "	" -----	.6985, 14° -----	Markownikow. Z. C. 14, 268.
" " " " "	" -----	.7144, 0° -----	Pawlow. A. C. P. 173, 194.
Octylene -----	$C_8H_{16}$ -----	.708, 16° -----	Cahours. C. R. 31, 143.
" -----	" -----	.723, 17° -----	Bouis. J. 7, 582.
" -----	" -----	.737, 20° -----	Fittig. J. 13, 320.
" -----	" -----	.7396, 0° -----	Warren and Storer. J. 21, 331.
" -----	" -----	.7217, 17° -----	Möslinger. Ber. 9, 1000.
" -----	" -----	.7294, 9° 9' -----	Schiff. G. C. I. 13, 177.
" -----	" -----	.6306, 123° 4' -----	
" -----	" -----	.7222, 22° -----	Laschowiez. A. C. P. 220, 185.
" -----	" -----	.7197, 20° -----	Brühl. A. C. P. 235, 1.
" -----	" -----	.73645, 20° -----	Sokolow. Ber. 21, ref. 56.
Diisopropyl ethylene -----	" -----	.7526, 16° -----	Williams. Ber. 10, 908.
Methyl ethyl propyl ethylene. " " " "	" -----	.73138, 20° -----	Sokolow. Ber. 21, ref. 56.
Diisobutylene -----	" -----	.734, 0° -----	Butlerow. J. C. S. 34, 122.
" -----	" -----	.737, 0° -----	Lermontoff. A. C. P. 196, 116.
Nonylene. B. 145° -----	$C_9H_{18}$ -----	.757, 20° 5' -----	Fittig. J. 13, 321.
" B. 153° -----		.7618, 0° -----	
" B. 134° -----	" -----	.853, 18° 4' -----	Warren and Storer. J. 21, 331.
" -----	" -----	.74333, 20° -----	Lemoine. B. S. C. 41, 161.
" -----	" -----	" -----	Sokolow. Ber. 21, ref. 56.
Diamylene. B. 165° -----	$C_{10}H_{20}$ -----	.7777, 0° -----	Bauer. J. 14, 660.
" B. 151° -----		.8416, 0° -----	Schneider. A. C. P. 157, 208.
" B. 174° 6' -----		.8248, 20° -----	
" B. 175° 8' -----		.7912, 0° -----	Warren and Storer. J. 21, 332.
" -----	" -----	.823, 0° -----	Warren and Storer. J. 21, 331.
" -----	" -----	.7789, 10° -----	Schiff. G. C. I. 13, 177.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Diamylene. B. 156°	$C_{10}H_{20}$	.6611, 156°	Schiff. G. C. I. 13, 177.
"	"	.6615, 156°	"
"	"	.77753, 152.2	Nasini and Bernheimer. G. C. I. 15, 50.
" B. 165°	"	.855, 14°	Lemoine. B. S. C. 41, 161.
" B. 164°	"	.7387, 20°	Lachowicz. A. C. P. 220, 177.
Endecylene	$C_{11}H_{22}$	.782, 0°	Warren. J. 21, 330.
"	"	.8398, 0°	Warren and Storer. J. 21, 332.
"	"	.791, 0°	Warren. J. 21, 332.
Dodecylene. B. 216°	$C_{12}H_{24}$	.791, 0°	Warren. J. 21, 330.
" B. 212° 6'	"	.8361	"
" B. 208-213°	"	.8543, 0°	Warren and Storer. J. 21, 332.
"	"	.8654, —31°	"
"	"	.7729, 0°	"
"	"	.7732, 0°	"
"	"	.7620, 15°	"
"	"	.7511, 30°	"
Dihexylene. B. 196°-199°	"	.796, 0°	"
"	"	.786, 19°	From two sources.
"	"	.809, 0°	Jawein. Ber. 11, 1258.
"	"	.798, 19°	"
Triisobutylene. B. 178°	"	.774, 0°	(Butlerow. Mem. Acad. St. Petersb., 1879.
"	"	.746, 50°	"
"	"	.773, 0°	Lermontoff. A. C. P. 196, 116.
"	"	.774, 0°	"
" B. 180°	"	.782, 0°	"
"	"	.7435, 51° 6'	"
"	"	.707, 99° 5'	"
"	"	.785, 0°	"
"	"	.751, 44° 9'	"
"	"	.783, 0°	"
"	"	.738, 60° 5'	Five different lots.
"	"	.707, 100° 2'	Puchot. Ann. (5), 28, 525.
"	"	.780, 0°	"
"	"	.779, 0°	"
"	"	.768, 14°	"
Tridecylene	$C_{13}H_{26}$	.8445, 0°	Warren and Storer. J. 21, 332.
Tetradecylene	$C_{14}H_{28}$	.7636, —12°	"
"	"	.7852, 0°	"
"	"	.7745, 15°	Kraft. Ber. 16, 3018.
"	"	.7638, 30°	"
Trimethylene	$C_{15}H_{30}$	.8139	Bauer. J. 14, 660.
Cetene. B. 275°	$C_{16}H_{32}$	.7893, 15° 2'	Mendeleeff. J. 13, 7.
"	"	.7915, 4°	"
"	"	.7839, 15°	"
"	"	.7686, 37° 1'	"
"	"	.7917, 4°	Two samples.
"	"	.7842, 15°	Kraft. Ber. 16, 3018.
"	"	.7689, 37° 1'	"
Dodecylene. B. 250°	"	.814, 15°	Bouis. Watts' Diet.
Ethanol. B. 280°	"	.9174	Dumas and Boullay. See Serullas.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Etherol -----	$C_{16}H_{32}$ -----	.921 -----	Serullas. Ann. (2), 39, 178.
Octodecylene -----	$C_{18}H_{36}$ -----	.7910, 18° -----	Krafft. Ber. 16, 3018.
" -----	" -----	.7881, 22° 1' -----	
" -----	" -----	.7790, 35° 6' -----	
Tetramylene -----	$C_{20}H_{40}$ -----	.8710, 0° -----	Bauer. J. 14, 660.
Cerotene -----	$C_{27}H_{54}$ -----	.861, 15° -----	Weltzien's "Zusammenstellung."
Melene -----	$C_{30}H_{60}$ -----	.89 -----	Watts' Dictionary.

## 3d. Acetylene Series and Derivatives.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acetylene. Liquefied -----	$C_2H_2$ -----	.460, -7° -----	Ansdell. C. N. 40, 136. Critical t°, 37°.05.
" " -----	" -----	.456, -3° -----	
" " -----	" -----	.451, 0° -----	
" " -----	" -----	.441, 4°.4 -----	
" " -----	" -----	.432, 9° -----	
" " -----	" -----	.420, 16°.4 -----	
" " -----	" -----	.413, 20°.6 -----	
" " -----	" -----	.404, 26°.25 -----	
" " -----	" -----	.397, 30° -----	
" " -----	" -----	.381, 34° -----	
Valerylene. B. 41°—42° -----	$C_5H_8$ -----	.69999, 0° -----	Buff. A. C. P., 4 Supp. Bd., 129.
" -----	" -----	.687386, 17° -----	
" -----	" -----	.65719, 41° -----	
" -----	" -----	.65082, 42° -----	
Isopropyl acetylene -----	" -----	.652, 11° -----	Brylhants. Ber. 8, 407.
" " B. 28°—29° -----	" -----	.6854, 0° -----	Flawitzky and Kriloff. Ber. 11, 1939.
Isoprene. B. 37°—38° -----	" -----	.6823, 20° -----	Williams. J. 13, 495.
" -----	" -----	.6709, 18° -----	Gladstone. J. C. S. 49, 623.
" Pentene -----	" -----	.6766, 18° -----	" "
Hexoylene. B. 80°—83° -----	$C_6H_{10}$ -----	.710, 13° -----	Reboul and Truchot. J. 20, 587.
" -----	" -----	.7494, 0° -----	Hecht. Ber. 11, 1051.
" -----	" -----	.7377, 13° -----	
Diallyl. B. 59°.5 -----	" -----	.684, 14° -----	Berthelot and Luca. J. 1, 590.
" -----	" -----	.68724, 17° -----	Buff. A. C. P., 4th Supp. Bd., 129.
" -----	" -----	.64682, 59°.5 -----	
" -----	" -----	.64564, 58° -----	
" -----	" -----	.7074, 0° -----	Zander. A. C. P. 214, 181.
" -----	" -----	.6508, 59°.5 -----	Schiff. G. C. I. 13, 177.
" -----	" -----	.6983, 11°.9 -----	
" -----	" -----	.6503, 59°.3 -----	
" -----	" -----	.6880, 20° -----	Brühl. Bei. 4, 780.
Diallylene -----	$C_6H_8$ -----	.8579, 18°.2 -----	L. Henry. C. N. 38, 101.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dipropargyl .....	$C_6H_6$ .....	.81, 18° .....	L. Henry, J. C. S. 42, 11, 1215.
" .....	" .....	.82 .....	Berthelot and Ogier, J. C. S. 40, 719.
Ethyl propyl acetylene ..	$C_7H_{12}$ .....	.790, 0° .....	Béhal, Ber. 20, ref. 809.
Tetramethyl allylene .....	" .....	.9513, 9° .....	L. Henry, Ber. S. 460.
Methyl propyl allylene .....	" .....	.8031, 20° .....	Renard, C. R. 94, 419.
Heptidene .....	" .....	.7458, 20° .....	Brühl, A. C. P. 235, 1.
Conylene .....	$C_8H_{14}$ .....	.76076, 15° .....	Wertheim, A. C. P. 123, 157.
From allyl diethyl carbide- mol. " " " .....	" .....	.7731, 0° .....	Reformatsky, J. P. C. (2), 30, 217.
" " " " .....	" .....	.75856, 15.4 .....	
" " " " .....	" .....	.75922, 18° .....	
From allyl dipropyl carbide- mol. " " " .....	$C_{10}H_{18}$ .....	.7850 .....	Reformatsky, J. P. C. (2), 27, 383.
" " " " .....	" .....	.7830 .....	
" " " " .....	" .....	.7825 .....	
" " " " .....	" .....	.7835 .....	
" " " " .....	" .....	.7726 .....	
" " " " .....	" .....	.7705 .....	
" " " " .....	" .....	.7738 .....	
" " " " .....	" .....	.7740, 16° .....	
" " " " .....	" .....	.7705 .....	
" " " " .....	" .....	.7681 .....	
" " " " .....	" .....	.7665 .....	
" " " " .....	" .....	.7703 .....	
" " " " .....	" .....	.7728, 20° 6 .....	
From allyl dimethyl carbide- mol. " " " .....	$C_{12}H_{20}$ .....	.8530, 0° .....	Nikolsky and Saytzeff, J. P. C. (2), 27, 383.
" " " " .....	" .....	.8385, 20° .....	
" " " " .....	" .....	.8512, 0° .....	Albitsky, J. P. C. (2), 30, 213.
" " " " .....	" .....	.8449, 16.8 .....	
" " " " .....	" .....	.8349, 21° 4 .....	
Dodecylidene .....	$C_{12}H_{22}$ .....	.8030, 0° .....	Krafft, Ber. 17, 1371.
" .....	" .....	.7917, 15° .....	
" .....	" .....	.7788, 32° 5 .....	
Tetradecylidene .....	$C_{14}H_{26}$ .....	.8064, 0° 5 .....	" .....
" .....	" .....	.8000, 15° 2 .....	
" .....	" .....	.7872, 30 .....	
Hexylene .....	$C_{16}H_{28}$ .....	.9114, 0° .....	Wertheim, A. C. P. 123, 157.
Trivalerylene .....	$C_8H_{14}$ .....	.892, 15° .....	Reboul, J. 20, 585.
Hexadecylidene .....	$C_{16}H_{32}$ .....	.8639, 20° .....	Krafft, Ber. 17, 1371.
" .....	" .....	.7629, 30° .....	
Octadecylidene .....	$C_{18}H_{34}$ .....	.8916, 30° .....	" .....
Tricosylene .....	$C_{26}H_{50}$ .....	.8181, 24° .....	Lippmann and Hezek, Ber. 12, 72.

## 4th. Benzene Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Benzene	$C_6H_6$	.85, 15°.5	Faraday. P. T. 1825, 440.
"	"	.956, —18°.s.	Mitscherlich. A. C. P. 9, 43.
"	"	.85	Mansfield. J. 1, 711.
"	"	.89911, 0°	Kopp. P. A. 72, 243.
"	"	.88372, 15°.2	
"	"	.88354, 15°.3	
"	"	.8931, 5°—10°	Regnault. P. A. 62, 50.
"	"	.8827, 10°—15°	
"	"	.8838, 15°—20°	
"	"	.8841, 15°	Mendeleeff. J. 13, 7.
"	"	.8667	Church. J. 17, 531.
"	"	.8957, 0°	Warren. J. 18, 515.
"	"	.8820, 15°.5	
"	"	.895, 3°	
"	"	.812, 80°.5	Jungfleisch. C. R. 64, 911.
"	"	.8995, 0°	
"	"	.8890, 10°	
"	"	.8784, 20°	Louguine. Ann. (4), 11, 453. Other values given for intermediate t's.
"	"	.8568, 40°	
"	"	.8349, 60°	
"	"	.8126, 80°	
"	"	.90023, 0°	
"	"	.89502, 5°	
"	"	.88982, 10°	
"	"	.88462, 15°	
"	"	.87940, 20°	
"	"	.87417, 25°	
"	"	.86891, 30°	Adrieenz. Ber. 6, 442.
"	"	.86362, 35°	
"	"	.85829, 40°	
"	"	.85291, 45°	
"	"	.84748, 50°	
"	"	.84198, 55°	
"	"	.83642, 60°	
"	"	.83078, 65°	
"	"	.82503, 70°	
"	"	.81923, 75°	
"	"	.81331, 80°	Pisati and Paterno. J. C. S. (2), 12, 686.
"	"	.899487, 0°	
"	"	.883573, 15°	
"	"	.872627, 25°	
"	"	.846170, 50°	
"	"	.818721, 75°	Landolt. Ber. 9, 907.
"	"	.88029	Naumann. Ber. 10, 1422.
"	"	.8773, 20°	Ramsay. J. C. S. 35, 463.
"	"	.8142, 80°	Thorpe and Watts. J. C. S. 37, 102.
"	"	.8858, 15°	Schiff. Ber. 14, 2769.
"	"	.8111, 80°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Benzene	$C_6H_6$	.9000, 0°	Dietl. J. P. C. (2),
"	"	.8818, 20°	27, 368.
"	"	.8839, 14° 2	Schiff. G. C. I. 13,
"	"	.8111, 80° 1	177.
"	"	.8799, 20°	Brühl. Bei. 4, 780.
"	"	.87901, 20°	Flink. Bei. 8, 262.
"	"	.8719, 25° 7	Schall. Ber. 17, 2555.
"	"	.8845, 13° 8	
"	"	.8881, 7° 5	
"	"	.8901	Gladstone. Bei. 9,
"	"	.8903	
"	"	.8801, 20°	Knops. V. H. V.
"	"		1887, 17.
"	"	.85716, 40° 1	Taken at different pressures, each t° being the boiling point at the pressure observed. Neuback. Z. P. C. 1, 654.
"	"	.85493, 41° 3	
"	"	.84324, 53° 2	
"	"	.84006, 54° 7	
"	"	.83101, 64° 1	
"	"	.83081, 64° 2	
"	"	.82099, 72° 9	
"	"	.82079, 73° 4	
"	"	.81387	
"	"	.81392	
"	"	.81297, 79° 9	Weegmann. Z. P. C.
"	"	.87907, 20°	
Toluene	$C_7H_8$	.86	2, 218.
"	"	.821	Pelletier and Wal-
"	"	.864, 23°	ter. Gm. II.
"	"		Courbe. Gm. II.
"	"	.87, 18°	Glénard and Bou-
"	"	.8650	dault. Gm. II.
"	"	.8824, 0°	Deville. Gm. II.
"	"	.8720, 15°	Church. J. 17, 531.
"	"	.881, 5°	Warren. J. 18, 515.
"	"		
"	"	.8841, 0°	Tollens and Fittig.
"	"	.8657, 20°	
"	"	.8375, 50°	A. C. P. 131, 303.
"	"	.8086, 80°	
"	"	.7889, 100°	Louguinine. Ann.
"	"	.866, 20°	
"	"		(4), 11, 453. Other
"	"	.8657, 20°	values given for
"	"	.7650, 111°	intermediate t°s.
"	"		Post and Mehrten.
"	"	.8829, 0°	Ber. 8, 1551.
"	"	.8797, 2° 77	Naumann. Ber. 10,
"	"	.8722, 10° 89	
"	"	.8692, 14° 13	1425.
"	"	.8653, 18° 43	Ramsay. J. C. S.
"	"	.8556, 28° 74	
"	"	.8430, 42° 24	Naccari and Pag-
"	"	.8258, 60° 04	
"	"	.8136, 72° 46	liani. Bei. 6, 88.
"	"	.7874, 99° 01	Several other in-
"	"	.7811, 105° 17	
"	"		termediate val-
"	"		ues are given.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Toluene	$C_7H_8$	.8708, 13°.1	} Schiff. G. C. I 13, 177.
"	"	.7780	
"	"	.77807	} 109°.2
"	"	.7781	
"	"	.8656, 20°	Brühl. Bei. 4, 780.
"	"	.7801, 109°	Schall. Ber. 17, 2204.
"	"	.8617, 26°	} Schall. Ber. 17 2555.
"	"	.85098, 34°.5	
"	"	.8704, 7°.5	Gladstone. Bei. 9, 249.
"	"	.8643	} 14° { Gladstone and Tribe. J. C. S. 47, 448.
"	"	.8691	
"	"	.82664, 61°.2	}
"	"	.82441, 62°.3	
"	"	.82435, 63°.5	}
"	"	.80656, 81°.2	
"	"	.80637, 81°.5	}
"	"	.79470	
"	"	.79494	} Taken at different pressures, each t°.
"	"	.78576, 102°.6	
"	"	.78515, 103°	} being the boiling point at the pressure observed.
"	"	.77816	
"	"	.77788	} 110°.1
"	"	.77741, 110°.7	
"	"	.77694, 110°.8	Neubeck. Z. P. C. 1, 656.
Xylene*	$C_6H_4(C_2H_5)_2$	.8309, 15°	Mendelejeff. J. 13, 7.
"	"	.8668, 21°	Beilstein. A. C. P. 133, 37.
"	"	.8770, 0°	}
"	"	.8600, 20°	
"	"	.8340, 50°	} Loughnine. Ann. (4), 11, 453. Values given for other intermediate t°s.
"	"	.8073, 80°	
"	"	.7892, 100°	}
"	"	.8616, 20°	
"	"	.7335, 132-134°	Naumann. Ber. 10, 1426.
"	"	.8619, 20°	Ramsay. J. C. S. 35, 463.
"	"	.8619, 20°	Brühl. A. C. P. 235, 1.
Orthoxylene	"	1.2 .7559, 141°.1	Schiff. Ber. 15, 2974.
"	"	.8632, 18°	Gladstone. Bei. 9, 249.
"	"	.876, 24°.5	Colson. Ann. (6), 6, 86.
"	"	.81449, 90°.4	}
"	"	.81422, 90°.6	
"	"	.79497, 112°.7	} Taken at different pressures, each t°.
"	"	.79435, 112°.9	
"	"	.78204	} 123°.8
"	"	.78188	
"	"	.77398	} being the boiling point at the pressure observed.
"	"	.77413	
"	"	.76684	} 133°.9
"	"	.76661	
"	"	.76569, 142°.5	Neubeck. Z. P. C. 1, 656.
"	"	.8932, 0°	} Pinette. A. C. P. 243, 50.
"	"	.7684, 141°.9	

\* Exact character not specified. For sp. gr. of several mixed xylenes see Lewinstein, Ber. 17, 446.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Metaxylene	$C_6H_4(C_2H_5)_2$	1.3	
"	"	.878, 0°	Warren, J. 18, 515.
"	"	.896, 15°	"
"	"	.8715, 12°	"
"	"	.7567, 139°	Schiff, G. C. 1,
"	"	.7571, 139°	13, 177.
"	"	.7572, 139°	"
"	"	.8726, 15°	Gladstone, Bei. 9,
"	"		249.
"	"	.861, 24°	Colson, Ann. (6),
"	"		6, 86.
"	"	.8655, 20°	Bruhl, A. C. P.
"	"		235, 1.
"	"	.80588, 88°	"
"	"	.80522, 89°	"
"	"	.78722, 108°	"
"	"	.78667, 108°	"
"	"	.77483, 120°	Taken at different
"	"	.77427, 121°	pressures, each (2,
"	"		being the boiling
"	"		point at the pressure
"	"	.76639, 120°	observed.
"	"	.76647, 120°	Neuback, Z. P. C.
"	"	.75799, 138°	1, 656.
"	"	.75795, 138°	"
"	"	.75658, 139°	"
"	"	.75685, 139°	"
"	"	.8812, 0°	Pinette, A. C. P.
"	"		243, 50.
"	"	.7567, 138°	"
Paraxylene		1.4	
"	"	.8621, 13°	Glinzer and Fittig
"	"		A. C. P. 136, 303.
"	"	.7543, 136°	Schiff, Ber. 11, 2769.
"	"	.7515, 136°	"
"	"	.8488, 16°	Gladstone, Bei. 9,
"	"		246.
"	"	.851, 24°	Colson, Ann. (6),
"	"		6, 86.
"	"	.80215, 86°	"
"	"	.80189, 86°	"
"	"	.78344, 106°	Taken at different
"	"	.78310, 107°	pressures, each
"	"	.77262, 119°	(2, being the
"	"		boiling point at
"	"	.75968, 120°	the pressure obs-
"	"	.75983, 120°	erved.
"	"	.75429, 137°	Neu-
"	"	.75421, 137°	beck, Z. P. C.
"	"	.75306, 138°	1, 656.
"	"	.75304, 138°	"
"	"	.8801, 0°	Pinette, A. C. P.
"	"		243, 50.
"	"	.7558, 138°	"
Ethylbenzene	$C_6H_5(C_2H_5)$	1.22	
"	"	.8961, 22°	Fittig and Koenig
"	"		A. C. P. 141, 277.
"	"	.8760, 9°	"
"	"	.7641, 135°	Schiff, G. C. 1,
"	"	.7642, 135°	13, 177.
"	"	.88316, 0°	Weger, A. C. P.
"	"	.7612, 136°	221, 61.
"	"	.8673, 20°	Bruhl, A. C. P.
"	"		235, 1.
Trimethylbenzene	$Me_3C_6H_3(C_2H_5)_3$	1.35	
stylyene		.863, 13°	Schwanert,

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Trimethylbenzene. Me- sitylene.	$C_6H_3(C_2H_5)_3$ -----	.8643, 0° } --	Warren. J. 18, 515.
"	"	.8530, 15° } --	
"	"	.8694, 9°.8-- } --	Schiff. G. C. I. 13,
"	"	.7372, 164°.5 } --	177.
"	"	.8558, 20° ----	Brühl. Bei. 4, 781.
"	"	.8632, 19° ----	Gladstone. Bei. 9,
" Pseudocumene	" 1.3.4.---	.8901, 0° ----	249.
Orthomethylethylbenzene	$C_6H_4 \cdot CH_3 \cdot C_2H_5$ . 1.2.---	.8731, 16° ----	Konowalow. Ber.
Metamethylethylbenzene	" 1.3.---	.869, 20° ----	20, ref. 570.
Paramethylethylbenzene	" 1.4.---	.8694, 11°.3 } --	Claus and Mann.
"	"	.7393 } 162° } --	Ber. 18, 1122.
"	"	.7394 } 162° } --	Wroblevsky. A. C.
"	"	.864, 20° ----	P. 192, 198.
Propylbenzene	$C_6H_5 \cdot C_3H_7$ -----	.881, 0° ----	Paterno and Spica.
"	"	.88009, 0° ----	Ber. 10, 294.
"	"	.8692, 17° ----	Spica. J. C. S. 36, 631.
"	"	.8702, 9°.8-- } --	Wispek and Zuber.
"	"	.7399, 158°.5 } --	A. C. P. 218, 380.
Isopropylbenzene. Cu- mene.	"	.87	Schiff. G. C. I. 13,
"	"	.8792, 0° } --	177.
"	"	.8675, 15° } --	Pelletier and Wal-
"	"	.87976, 0° } --	ter. Ann. (2), 67,
"	"	.85870, 25° } --	269.
"	"	.83756, 50° } --	Warren. J. 18, 515.
"	"	.81585, 75° } --	
"	"	.79324, 100° } --	Pisati and Paterno.
"	"	.86576, 17°.5 } --	J. C. S. (2), 12, 686.
"	"	.8776, 0° ----	Liebmann. Ber. 13,
"	"	.8577, 25° ----	46.
"	"	.87798, 0° ----	Two preparations.
"	"	.85766, 25° ----	Silva. B. S. C.
"	"	.8432, 12° ----	43, 317.
Tetramethylbenzene	$C_6H_2(C_2H_5)_4$ -----	.8816, 9° ----	Gladstone. Bei. 9,
Dimethylethylbenzene	$C_6H_3(C_2H_5)_2 \cdot C_2H_5$ . 1.2.4.---	.8783, 20° ----	249.
"	" 1.3.5.---	.8644, 20° ----	Knublauch. Tübing-
"	"	.861, 20° ----	en Inaug. Diss.,
"	" 1.3.4.---	.8686, 20° ----	1872.
Diethylbenzene	$C_6H_4(C_2H_5)_2$ . 1.4.---	.8707, 15°.5--	Ernst and Fittig.
Metamethylpropylben- zene.	$C_6H_4 \cdot CH_3 \cdot C_3H_7$ . 1.3.---	.863, 16° ----	A. C. P. 139, 192.
			Jacobsen. B. S. C.
			24, 73.
			Wroblevsky. A. C.
			P. 192, 217.
			Anschütz. A. C. P.
			235, 324.
			Fittig and König.
			A. C. P. 144, 285.
			Claus and Stuesser.
			Ber. 13, 899.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Metamethylpropylbenzene.	$C_6H_5 \cdot CH_2 \cdot C_3H_7$	1.3	.8728, 0° . . . . . Spica. Ber. 16, 792.
"	"	"	.8641, 92.8° . . . . . Schiff. G. C. I. 13.
"	"	"	.7218, 175° 14' . . . . . 177.
Paramethylpropylbenzene. Cymene.	"	1.4	.860, 14° . . . . . Gerhardt and Cahours. A. C. P. 38, 315.
"	"	"	.857, 16° . . . . . Nord. A. C. P. 63, 281.
"	"	"	.8778, 0° . . . . . Kopp. A. C. P. 94, 257.
"	"	"	.8678, 12° 16' . . . . .
"	"	"	.8660, 15° . . . . . Mendeleeff. J. 13, 7.
"	"	"	.8664, 20° . . . . . Williams. J. C. S. 15, 120.
"	"	"	.8697, 0° . . . . . { From cummin oil.
"	"	"	.8724, 0° . . . . . { Warren. Mem.
"	"	"	.8592, 14° . . . . . { Amer. Acad. 9, 154.
"	"	"	.8705, 0° . . . . . { From cummin oil.
"	"	"	.8544, 20° . . . . . { Longuine. Ann.
"	"	"	.8392, 50° . . . . . { 4, 11, 153. Other
"	"	"	.7896, 100° . . . . . { values given for
"	"	"	.8732, 0° . . . . . { intermediate t's.
"	"	"	.8574, 20° . . . . . { From campher.
"	"	"	.8533, 50° . . . . . { Longuine. Ann.
"	"	"	.7919, 100° . . . . . { 4, 11, 153. Other
"	"	"	.8708, 0° . . . . . { values given for
"	"	"	.8572, 20° 2' . . . . . { intermediate t's.
"	"	"	.8732, 0° . . . . . { From two sources.
"	"	"	.8707, 0° . . . . . { Beilstein and
"	"	"	.86 . . . . . { Kupffer. J. C.
"	"	"	.86 . . . . . { S. 2, 12, 152.
"	"	"	.86 . . . . . { Beilstein and Kup-
"	"	"	.86 . . . . . { ffer. A. C. P. 170,
"	"	"	.86 . . . . . { 295.
"	"	"	.86 . . . . . { Gladstone. J. C. S.
"	"	"	.8421 . . . . . { (2), 11, 659.
"	"	"	.8438 . . . . . { Ext. of S. from dif-
"	"	"	.878, 16° . . . . . { ferent sources.
"	"	"	.8746, 0° . . . . . { Gladstone. J. C.
"	"	"	.82552, 50° . . . . . { S. (2), 11, 970.
"	"	"	.8140, 75° . . . . . { Orlowsky. B. S. C.
"	"	"	.79457, 100° . . . . . { 21, 321.
"	"	"	.87227, 0° . . . . . { From cummin oil.
"	"	"	.82552, 50° . . . . . { Pinti and Paterno.
"	"	"	.81209, 75° . . . . . { J. C. S. (2),
"	"	"	.79457, 100° . . . . . { 12, 686.
"	"	"	.87224, 0° . . . . . { From cymylalcohol.
"	"	"	.82552, 50° . . . . . { Pinti and Paterno.
"	"	"	.81209, 75° . . . . . { J. C. S. (2),
"	"	"	.79457, 100° . . . . . { 12, 686.
"	"	"	.87224, 0° . . . . . { From campher.
"	"	"	.82552, 50° . . . . . { Pinti and Paterno.
"	"	"	.81230, 75° . . . . . { J. C. S. (2), 12,
"	"	"	.79422, 100° . . . . . { 686.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Paramethylpropylbenzene. Cymene.	$C_6H_4 \cdot CH_3 \cdot C_3H_7$ 1.4	.86542, 0° -- } .78429, 100° }	{ From thyme oil. Pisati and Paterno. J. C. S. (2), 12, 686.
"	"	.8598, 15° -- }	{ From two sources.
"	"	.8732, 0° } }	{ Kraut. A. C. P.
"	"	.8595, 15° } }	{ 192, 224.
"	"	.8718, 0° ---- }	{ Jacobsen. Ber. 11,
"	"	.86035, 10° }	{ 1060.
"	"	.873, 0° ----	Febve. Ber. 14, 1720.
"	"	.8720, 20° ----	Kanonnikoff. Bei.
"	"	"	7, 542.
"	"	.7248, 176°.2	Schiff. Ber. 15, 2974.
"	"	.8569	Brühl. A. C. P. 235, 1.
"	"	.8551, 21° ----	Gladstone. J. C. S.
Methylisopropylbenzene	"	.86948, 0° -- }	Silva. B. S. C. 43,
"	"	.86211, 25° }	317.
"	"	.8702, 0° ----	Jacobsen. Ber. 12,
Butylbenzene	$C_6H_5 \cdot C_4H_9$ -----	.8622, 16° ----	Radziszewski. Ber.
"	"	.875, 0° ---- }	9, 260.
"	"	.864, 15° ---- }	{
"	"	.794, 99°.3 ---- }	{ Balbiano. Ber. 10,
Isobutylbenzene	"	.8577, 16° ----	296.
"	"	.89, 15° ----	Riess. Z. C. 14, 3.
"	"	.8726, 16° ---- }	Radziszewski. Ber.
Methyldiethylbenzene	$C_6H_5 \cdot C_2H_5 (C_2H_5)_{1.3.5}$	.8790, 20° ----	9, 260.
Dimethylpropylbenzene	$C_6H_5 (C_2H_5)_2 C_3H_7$	.887, 10° ----	Jacobsen. B. S. C.
Laurene.	"	"	24, 74.
Metaethylpropylbenzene	$C_6H_4 \cdot C_2H_5 \cdot C_3H_7$ 1.3	.8588, 19° ----	Fittig, Köbrich, and
Amylbenzene	$C_6H_5 \cdot C_5H_{11} (C_2H_5)_2$	.8751, 0° ----	Jilke. J. 20, 701.
"	"	.8731, 21° ----	Renard. Ann. (6),
"	$C_6H_5 \cdot C(CH_3)_2 \cdot C_2H_5$	.8728, 0° ----	1, 223.
"	$C_6H_5 (C_2H_5)_4 (CH)_3$	.8602, 22° ----	Lippmann and Lou-
Isoamylbenzene	$C_6H_5 \cdot CH_2 \cdot CH_2 \cdot CH (C_2H_5)_2$	.859, 12° ----	guinine. J. 20, 667.
Orthoisomylmethylbenzene.	$C_6H_4 \cdot CH_3 \cdot C_5H_{11}$ 1.2	.8945	Dufert. M. C. 4, 617.
Paraisomylmethylbenzene.	" 1.4	.8643, 9° ----	Essner. Ber. 14, 2582.
Parapropylisopropylbenzene.	$C_6H_4 (C_3H_7)_2$ 1.4	.8713, 0° ----	Schraumm. A. C. P.
Isohexylbenzene	$C_6H_5 \cdot C_6H_{13}$	.8568, 16° ----	218, 389.
Amyldimethylbenzene	$C_6H_3 (C_2H_5)_2 \cdot C_5H_{11}$	.8951, 9° ----	Tollens and Fittig.
Normal octylbenzene	$C_6H_5 \cdot C_8H_{17}$	.849, 15° ----	A. C. P. 131, 303.
"	"	.852, 14° ----	Pabst. B. S. C. 25,
Diisoamylbenzene	$C_6H_4 (C_5H_{11})_2$	.8868, 0° ----	337.
			Bigot and Fittig. J.
			20, 667.
			Paterno and Spica.
			Ber. 10, 1746.
			Schraumm. A. C. P.
			218, 391.
			Bigot and Fittig. J.
			20, 667.
			Schweinitz. Ber. 19,
			642.
			Ahrens. Ber. 19,
			2718.
			A. Austin. B. S. C.
			32, 13.

## 5th. Miscellaneous Aromatic Hydrocarbons.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Allylbenzene	$C_6H_5 \cdot C_3H_5$	.9180, 15°	Perkin. C. N. 36, 211.
Isopropylvinylbenzene	$C_6H_4 \cdot C_3H_7 \cdot C_2H_5$	.8902, 15°	" "
Isopropylallylbenzene	$C_6H_4 \cdot C_3H_7 \cdot C_3H_5$	.890, 15°	" "
Isopropylbutenylbenzene	$C_6H_4 \cdot C_3H_7 \cdot C_4H_7$	.8875, 15°	" "
Phenylacetylene	$C_6H_5 \cdot C_2H_3$	.9658, 0°	Weger. A. C. P.
"	"	.90832, 1415.6	( 221, 61.
"	"	.9295, 20°	Bruhl. A. C. P.
			235, 1.
Ethylphenylacetylene	$C_2 \cdot C_2H_5 \cdot C_6H_5$	.923, 21°	Morgan. J. C. S. (3), 1, 163.
Cinnamene. (Styrolene).	$C_2H_5 \cdot C_6H_5$	.928, 15°	E. Kopp. J. P. C. 37, 283.
"	"	.924	Glythand Hofmann. A. C. P. 53, 291.
"	"	.876	Scharling. A. C. P.
"	"	.896, 16°	97, 186.
"	"	.912, 15°	Perkin. J. C. S. 32, 660.
"	"	.911	
"	"	.912	
"	"	.915, 10°	From different sources. Krakau.
"	"	.925	Ber. 11, 1260.
"	"	.926	
"	"	.7926, 143°	Schiff. G. C. I. 13, 177.
"	"	.9251, 0°	Weger. A. C. P.
"	"	.7911, 146° 2'	221, 61.
"	"	.90395, 17°	Nasini and Bernheimer. G. C. I. 15, 50.
"	"	.9084	Gladstone. J. C. S. 45, 241.
"	"	.9109, 11°	
"	"	.9074, 20°	Bruhl. A. C. P.
			235, 1.
Metacinnamene	$(C_5H_9)_6$	1.051, 13°	Scharling. A. C. P. 97, 186.
Deincinnamene	$C_{16}H_{16}$	1.027, 6°	Erdmann. A. C. P. 216, 189.
"	"	1.016, 15°	
Phenylbutylene	$C_4H_7 \cdot C_6H_5$	.9015, 15° 5'	Aronheim. B. S. C. 19, 258.
"	"	.8864, 12° 1'	Nasini. Bei. 9, 331.
Phenylpentylene	$C_5H_9 \cdot C_6H_5$	.8458, 23°	Dufert. M. C. 4, 625.
Phenylisopentylene	"	.878, 16°	Schramm. A. C. P. 218, 394.
Tetraphenylethane	$C_2H_2 \cdot C_6H_5 \cdot 4$	1.179	Schroder. Ber. 14, 2516.
"	"	1.184	
Phenyl-diethane	$C_2H_4 \cdot C_6H_5 \cdot C_2H_5$	.98	Bandrowski. B. S. C. 23, 79.
Diethylethane	$C_2H_4 \cdot (C_2H_5)_2$	.974, 20°	Anschutz. A. C. P. 235, 315.
Dixylethane	$C_2H_4 \cdot C_8H_9 \cdot 2$	.966, 20°	Anschutz. A. C. P. 235, 326.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Diphenylpropane-----	$C_3 H_6 (C_6 H_5)_2$ -----	.9956, 0° } .9205, 100° }--	Silva. Ber. 12, 2270.
Tetrahydrotoluene-----	$C_7 H_{12}$ -----	.797, 18°-----	Renard. Ann. (6), 1, 223.
Tetrahydroxylene-----	$C_8 H_{14}$ -----	.814, 0°-----	Wreden. A. C. P. 163, 337.
“-----	“-----	.8158-----	Renard. Ann. (6), 1, 223.
Hexhydrobenzene-----	$C_6 H_{12}$ -----	.76, 0°-----	Wreden. J. R. C. 5, 350.
Hexhydrotoluene-----	$C_7 H_{14}$ -----	.772, 0°-----	Wreden. Ber. 10, 713.
“-----	“-----	.758, 20°-----	Renard. Ann. (6), 1, 223.
“-----	“-----	.742, 20°-----	“-----
“-----	“-----	.7741, 0°-----	“-----
“-----	“-----	.7587, 19°-----	Lossen and Zander. A. C. P. 225, 109.
“-----	“-----	.6896, 96°.5 } .7956, 4°-----	Schiff. Ber. 13, 1407.
Hexhydroxylene. (B. 137°.6.)	$C_8 H_{16}$ -----	.7956, 4°-----	“-----
“ (B. 121°.5)-----	“-----	.764, 19°-----	Renard. Ann. (6), 1, 223.
Hexhydroisoxylene-----	“-----	.781, 0°-----	Wreden. Ber. 10, 712.
“ (B. 118°)-----	“-----	.765, 20°-----	Wreden. J. C. S. (2), 12, 258.
“-----	“-----	.777, 0°-----	“-----
“-----	“-----	.7814, 0°-----	“-----
“-----	“-----	.7665, 19°.3 } .6781, 118° } .787, 20°-----	Lossen and Zander. A. C. P. 225, 109.
Hexhydrocumene-----	$C_9 H_{18}$ -----	.787, 20°-----	Renard. Ann. (6), 1, 223.
Hexhydropseudocumene-----	“-----	.7812, 0°-----	Konowaloff. Ber. 20, ref. 571.
“-----	“-----	.7667, 20°-----	Renard. Ann. (6), 1, 223.
Hexhydrocymene-----	$C_{10} H_{20}$ -----	.8116, 17°-----	Gladstone and Tribe. J. C. S. 47, 448.
β. Benzylene-----	$C_7 H_6$ -----	1.106, 35°-----	Schröder. Ber. 14, 2516.
Diphenyl-----	$C_{12} H_{10}$ -----	1.160-----	Schiff. A. C. P. 223, 247.
“-----	“-----	1.169-----	“-----
“-----	“-----	.9961, 70°.5-----	“-----
Triphenylbenzene-----	$C_6 H_3 (C_6 H_5)_3$ -----	1.205-----	Schröder. Ber. 14, 2516.
“-----	“-----	1.206-----	“-----
Phenyltoluene-----	$C_6 H_4 \cdot CH_3 \cdot C_6 H_5$ . 1.4	1.015, 27°-----	Carnelley. J. C. S. (2), 14, 18.
Benzylethylbenzene-----	$C_6 H_4 \cdot C_2 H_5 \cdot C_7 H_7$ . 1.4	.985, 18°.9-----	Walker. Ber. 5, 686.
Metabenzyltoluene-----	$C_6 H_4 \cdot CH_3 \cdot C_7 H_7$ . 1.3	.997, 17°.5-----	Schiff. A. C. P. 220, 223.
Parabenzyltoluene-----	“ 1.4	.995, 17°.5-----	Zincke. A. C. P. 161, 93.
Dibenzyltoluene-----	$C_6 H_3 \cdot C H_3 (C_7 H_7)_2$ -----	1.049-----	Weber and Zincke. J. C. S. (2), 13, 155.
Phenylxylene-----	$C_6 H_3 (C H_3)_2 C_6 H_5$ -----	1.01, 0°-----	Barbier. J. C. S. (2), 13, 62.
Benzylcymene-----	$C_{10} H_{13} \cdot C_7 H_7$ -----	.987, 0°-----	Mazzara. Ber. 12, 384.
Dipentenylbenzene-----	$C_{22} H_{28}$ -----	.9601, 23°-----	Dafert. M. C. 4, 625.
Benzylidenetolylene ?-----	$C_{14} H_{12}$ -----	1.0032, 18°-----	Lippmann. Ber. 19, ref. 744.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ditolyl .....	$C_{14}H_{10}$	.9172, 121°	Schiff, A. C. P. 223, 247.
Dibenzyl .....	"	1.002, 14°	Limpriht, J. 19, 593.
" .....	"	.9915, 107.5	Fittig, A. C. P. 139, 178.
" .....	"	1.0123, 52° 3	Schiff, A. C. P. 223, 247.
Dixylylene .....	$C_{16}H_{16}$	.9984, 22°	Lippmann, Ber. 19, re2, 744.
Naphthal no. 1. ....	$C_{10}H_8$	.9774, 79.42	Kopp, A. C. P. 95, 307.
" .....	"	.9928, 99.2	Alward, J. 12, 472.
" .....	"	1.15173, 19	Vohl.
" .....	"	1.153, 18°	Watts' Dictionary.
" .....	"	1.918	Ure, Gm. H.
" .....	"	1.321	Schröder, Ber. 12, 1611.
" .....	"	1.341	"
" .....	"	.8779, 218°	Ramsay, J. C. S. 39, 65.
" .....	"	.9777, 79.2	Schiff, A. C. P. 223, 247.
" .....	"	.982, 79°	Lossen and Zander.
" .....	"	.8674, 217.1	A. C. P. 225, 109.
" .....	"	.99208, 98.4	Nasini and Bernheimer, G. C. I. 15, 50.
Methylnaphthalene .....	$C_{10}H_7, C_9H_8$	1.0287, 112.5	Fittig and Remsen, A. C. P. 155, 111.
" .....	"	1.0042, 22°	Reingruber, A. C. P. 206, 376.
Dimethylnaphthalene .....	$C_{10}H_6 (C_2H_5)_2$	1.0176, 20°	Giovannozzi, J. C. S. 42, 853.
" .....	"	1.0283, 0°	(Cannizzaro and Carnelutti, J. C. S. 44, 80.)
" .....	"	1.10199, 12°	"
" .....	"	1.01803, 167.1	Nasini and Bernheimer, G. C. I. 15, 50.
" .....	"	1.01058, 272.7	"
" .....	"	.97411, 77.7	"
Ethylnaphthalene .....	$C_{10}H_7, C_2H_5$	1.0181, 10	Fittig and Remsen, A. C. P. 155, 118.
" .....	"	1.0204, 0°	Carnelutti, Ber. 13, 1672.
" .....	"	1.0123, 11.9	"
Isopropylnaphthalene .....	$C_{10}H_7, C_3H_7$	.999, 0°	Roux, Ann. (6), 12, 319.
Amylnaphthalene .....	$C_{10}H_7, C_5H_{11}$	.973, 0	Roux, Ann. (6), 12, 321.
Naphthalene tetrahydride .....	$C_{10}H_8, H_4$	.981, 12°	Grube, B. S. C. 18, 205.
" .....	"	.995, 0°	Wreden and Znato-wicz, Ber. 9, 1607.
Naphthalene hexahydride .....	$C_{10}H_8, H_6$	.952, 0°	"
" .....	"	.9419, 0°	Lossen and Zander, A. C. P. 225, 109.
" .....	"	.7509, 200°	"
" .....	"	.91887, 167.1	(Nasini and Bernheimer, Two samples, G. C. I. 15, 50.)
" .....	"	.95897, 18.4	"

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Naphthalene octahydride.	$C_{10} H_8 \cdot H_8$ -----	.910, 0° -----	Wreden and Znato- wicz. Ber. 9, 1607.
Naphthalene decahydride.	$C_{10} H_8 \cdot H_{10}$ -----	.857, 0° -----	" " "
Naphthalene dodecahy- dride.	$C_{10} H_8 \cdot H_{12}$ -----	.802, 0° -----	" " "
Dimethylnaphthalene hexahydride.	$C_{12} H_{12} \cdot H_6$ -----	.92194, 19°.8-----	Nasini and Bern- heimer. G. C. I. 15, 50.
$\alpha$ . Benzyl-naphthalene	$C_{10} H_7 \cdot C_7 H_7$ -----	1.166 -----	Miquel. Ber. 9, 1034.
"	"-----	1.165, 0° -----	Vincent and Roux. B. S. C. 40, 163.
$\beta$ . Benzyl-naphthalene	"-----	1.176, 0° -----	" " "
Acenaphtene	$C_{10} H_6 \cdot C_2 H_4$ -----	1.0300, 103° -----	Schiff. A. C. P. 223, 247.
Anthracene	$C_{14} H_{10}$ -----	1.147 -----	Reichenbaech. Watts' Dict.
Phenanthrene	"-----	1.0630, 100°.5-----	Schiff. A. C. P. 223, 247.
Phenanthrene tetrahy- dride.	$C_{14} H_{10} \cdot H_4$ -----	1.067, 10°.2-----	Graebe. J. C. S. (2), 14, 76.
Stilbene	$C_{14} H_{12}$ -----	.9707, 119°.2-----	Schiff. A. C. P. 223, 247.
Retene. Solid	$C_{18} H_{18}$ -----	1.104 -----	} 16°
" "	"-----	1.110 -----	
" "	"-----	1.132 -----	
" "	"-----	1.152 -----	
" "	"-----	1.162 -----	
" Fused	"-----	1.063 -----	
" "	"-----	1.067 -----	
" "	"-----	1.074 -----	
" "	"-----	1.077 -----	} Ekstrand. A. C. P. 185, 78.
" "	"-----	1.087 -----	
" "	"-----	1.093 -----	

## 6th. Terpenes.

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Oil of turpentine	$C_{10} H_{16}$ -----	.8902, 0° -----	Frankenheim. J. 1, 68.
" "	"-----	.8555 -----	} 20° { Four different sam- ples. Gladstone. J. C. S. 17, 1.
" "	"-----	.8600 -----	
" "	"-----	.8614 -----	
" "	"-----	.8644 -----	
" " B. 168°.2	"-----	.7283, 168°.2-----	Schiff. Bei. 9, 559.
From Abies Regiæ-Amal- iæ.	"-----	.868 -----	Buchner and Theil. J. 17, 536.
From Pinus abies	"-----	.856, 20° -----	Wöhler. Gm. H.
" " "	"-----	.880, 15° -----	Blanchet and Sell. Gm. H.
From Pinus maritima	"-----	.864, 16° -----	Berthelot. J. 6, 519.
" " " B. 179°.3	"-----	.8639, 0° -----	} Flawitzky. Ber. 12, 2357.
" " "	"-----	.8486, 20° -----	
From Pinus picea	"-----	.859, 6° -----	Flückiger. J. 8, 643.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
From <i>Pinus pumilio</i> .....	$C_{10}H_{16}$	.875, 17°	Buchner. J. 12, 479.
From <i>Pinus sylvestris</i> .....	"	.86529, 15°	Tilden. J. C. S. 33, 89.
" " " B. 171° .....	"	.8746, 0°	Flawitzky. Ber. 11, 1846.
" " " " " " .....	"	.8621, 16°	
" " " " " " .....	"	.8547, 24°·5	
" " " " " " .....	"	.8764, 0°	Flawitzky. Ber. 20, 1956.
" " " " " " .....	"	.8600, 20°	
Terpene ? .....	"	.7421 ( 156°·1	Schiff. G. C. I. 13, 177.
" " " " " " .....	"	.7122 " "	
" ? .....	"	.8587, 20°	Kanonnikoff. Bei. 7, 592.
" .....	"	.8711, 10°·2	Gladstone. J. C. S. 49, 623.
Isoterpene .....	"	.8443, 20°	Kanonnikoff. Bei. 7, 592.
" .....	"	.8627, 0°	Flawitzky. Ber. 20, 1961.
" .....	"	.8480, 20°	
Thuja terpene. B. 160° .....	"	.852, 15°	Jahns. Ber. 16, 2930.
From <i>Sequoia</i> . B. 155° .....	"	.8522, 15°	Lunge and Steinkauler. Ber. 14, 2204.
Terebithene. B. 134° .....	"	.843	Watts' Dictionary.
Australene. B. 157° .....	"	.8631, 16°	Atterberg. Ber. 10, 1203.
Terebithened. B. 157° .....	"	.871, 17°·5	Atterberg. Ber. 14, 2531.
" .....	"	.8767, 0°	Ribon. B. S. C. 21, 173.
" .....	"	.8601, 20°	
" .....	"	.8433, 40°	
" .....	"	.8270, 60°	
" .....	"	.8105, 80°	
" .....	"	.7939, 100°	Barbier. C. R. 96, 1066.
" .....	"	.8812, 0	
" .....	"	.8815, 0°	
" .....	"	.8724, 12°	Yoshida. J. C. S. 47, 779.
" From camphor oil .....	"	.8641, 15°	
Terbithene .....	"	.8718	Pierre. J. 4, 52.
" .....	"	.8645, 5°-10°	Regnault. P. A. 62, 50.
" .....	"	.8605, 10°-15°	
" .....	"	.8564, 15°-20°	
" B. 160° .....	"	.8583, 20°	Gladstone. J. C. S. 17, 1.
" .....	"	.8767, 0°	Ribon. B. S. C. 21, 173.
" .....	"	.8600, 20°	
" .....	"	.8433, 40°	
" .....	"	.8267, 60°	
" .....	"	.8100, 80°	
" .....	"	.7933, 100°	Orlowsky. B. S. C. 21, 321.
" B. 156° .....	"	.8264, 15°	
Isoterebithene. B. 175° .....	"	.8432, 22°	Berthelot. J. C. 523.
" .....	"	.8586, 0	
" .....	"	.8427, 20°·28	Ribon. C. R. 79, 314.
" .....	"	.8273, 40°·19	
" .....	"	.8131, 58°·32	
" .....	"	.7964, 79°·24	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isoterebenthene -----	$C_{10}H_{16}$ -----	.7793, 100° -----	Riban. C. R. 79, 314.
Terpylene. Laevorotatory -----	-----	.8672, 0° -----	Bouchardat and Lafont. C. R. 102, 50.
Terpinylene. B. 177° -----	-----	.8526, 15° -----	Tilden. C. N. 37, 166.
Terpinene. B. 178 -----	-----	.93, 0° -----	Walitzky. Ber. 15, 1086.
“ -----	-----	.855 -----	Wallach. A. C. P. 230, 260.
Sylvestrene. B. 175° -----	-----	.8612, 16° -----	Atterberg. Ber. 10, 1206.
“ -----	-----	.8598, 17°.5 -----	Atterberg. Ber. 14, 2531.
“ -----	-----	.8658, 14° -----	Gladstone. Bei. 9, 249.
Austrapyrolene. B. 177° -----	-----	.847 -----	Watts' Dictionary.
From oil of neroli. B. 173° -----	-----	.8466, 20° -----	Gladstone. J. C. S. 17, 1.
From oil of orange -----	-----	.835 -----	Soubeiran and Capitaine.
“ “ “ B. 174° -----	-----	.8460 } 20° {	Gladstone. J. C. S. 17, 1.
“ “ “ -----	-----	.8468 } -----	“ “
From oil of petit grain -----	-----	.8470, 20° -----	“ “
From Citrus lumia -----	-----	.853, 18° -----	Luca. J. 13, 479.
From Citrus bigaradia -----	-----	.8520, 10° -----	Luca. C. R. 45, 904.
“ “ “ -----	-----	.8517, 12° -----	
From Citrus medica -----	-----	.8514, 15° -----	Berthelot. J. 6, 521.
“ “ “ -----	-----	.8466, 20° -----	Gladstone. J. C. S. 17, 1.
Oil of citron -----	-----	.8597, 5°—10° -----	Regnault. P. A. 62, 50.
“ “ -----	-----	.8558, 10°—15° -----	
“ “ -----	-----	.8518, 15°—20° -----	
Citron terpene -----	-----	.8593 } 9°.9 {	Schiff. Ber. 19, 560.
“ “ -----	-----	.8595 } -----	
“ “ -----	-----	.7279 } -----	
“ “ -----	-----	.7285 } 168° {	
“ “ -----	-----	.7286 } -----	
From oil of lemon -----	-----	.84 } -----	Zeller. Watts' Diet.
“ “ “ -----	-----	.86 } -----	
“ “ “ -----	-----	.8380 } 0° {	Frankenheim. Two samples. J. 1, 68.
“ “ “ -----	-----	.8661 } -----	
“ “ “ B. 173° -----	-----	.8468, 20° -----	Gladstone. J. C. S. 17, 1.
Citrene. B. 165° -----	-----	.8569 -----	Blanchet and Sell. Gm. H.
From oil of bergamot -----	-----	.856 -----	Ohme. A. C. P. 31, 316.
“ “ “ -----	-----	.8464 } 20° {	Gladstone. J. C. S. 17, 1.
“ “ “ -----	-----	.8466 } -----	
Hesperidene -----	-----	.8483 -----	Gladstone. Bei. 9, 249.
From oil of angelica -----	-----	.8487 -----	Müller. Ber. 14, 2483.
“ “ “ B. 175° -----	-----	.833, 0° -----	Naudin. Ber. 15, 254.
“ “ “ B. 158° -----	-----	.8609 } 16°.5 {	Beilstein and Wiegand. Ber. 15, 1741.
“ “ “ B. 173° -----	-----	.8504 } -----	
“ “ “ B. 170° -----	-----	.8481 } -----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
$\beta$ Terebangeline. B. 196.	$C_{19}H_{16}$	.870, 0°	Naudin. C. R. 96, 1153.
From oil of anise	"	.8780, 20°	Gladstone. J. C. S. 17, 1.
From oil of bay	"	.908, 15°	Blas. J. 18, 569.
" " "	"	.8508, 20°	Gladstone. J. C. S. 17, 1.
From oil of birch tar	"	.870, 20°	Sabrero. Watts' Diet.
From oil of calamus	"	.8793, 0°	Kurbatow. A. C. P. 173, 1.
From oil of camphor	"	.8733, 20°	Yoshida. J. C. S. 17, 779.
From oil of caraway	"	.8466, 20°	Gladstone. J. C. S. 17, 1.
Caryene	"	.861, 15°	Volekel. J. 6, 512.
"	"	.8530, 20°	Gladstone. J. C. S. 17, 1.
"	"	.8545, 20°	"
"	"	.8530, 20°	"
"	"	.7127	Schiff. G. C. I. 13, 177.
"	"	.7132	
"	"	.7133	
"	"	.8529, 20°	Kanonnikoff. Bei. 7, 592.
"	"	.849, 15°	Flückiger. Ber. 17, ref. 358.
From oil of cascarrilla	"	.8467, 20°	Gladstone. J. C. S. 17, 1.
From oil of copal	"	.951, 10°	Schibler. J. 12, 516.
From oil of cummin	"	.8772, 0°	Warren. J. 18, 515.
" " "	"	.8657, 15°	
From oil of dill	"	.8467, 20°	Gladstone. J. C. S. 17, 1.
From oil of elder	"	.8468, 20°	" "
From elemi	"	.849, 11°	Deyville. J. 2, 448.
" " "	"	.852, 24°	Stenhouse. A. C. P. 35, 304.
From oil of erechthidis	"	.8380, 18°.5	Beilstein and Wiegand. Ber. 15, 2854.
From oil of Erigeron canadense.	"	.8464, 18°	" "
From Eucalyptus amygdalina.	"	.8642, 20°	Gladstone. J. C. S. 17, 1.
From oil galbanum	"	.8842, 9°	Mosmer. J. 14, 687.
From Illicium religiosum	"	.855	Eykman. Ber. 14, 1721.
From karri gum	"	.863, 18°	Rennie. Ber. 14, 1719.
From laurel turpentine	"	.8618, 20°	Gladstone. J. C. S. 20, 1.
From oil of marjoram	"	.8463, 18°.5	Beilstein and Wiegand. Ber. 15, 2854.
From oil of mint	"	.8600, 20°	Gladstone. J. C. S. 17, 1.
" " "	"	.8646, 17°.3	Gladstone. J. C. S. 49, 623.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
From oil of peppermint	$C_{10}H_{16}$	.8602, 20°	Gladstone. J. C. S. 17, 1.
From menthol. B. 168.°6	"	.8254, 0°	Atkinson and Yoshida. J. C. S. 41, 49.
" " "	"	.8178, 10°	
" " "	"	.8111, 20°	
" " "	"	.8001, 40°	
" " "	"	.7924, 60°	
From oil of myrtle	"	.8690, 20°	Gladstone. J. C. S. 17, 1.
From oil of nutmeg	"	.8518	" "
" " " B. 167°	"	.8527	
" " " B. 164°	"	.8454, 25°	Gladstone. Bei. 9, 249.
" " " B. 178°	"	.8480, 27°	
From oil of parsley	"	.8732, 20°	Gladstone. J. C. S. 17, 1.
From oil of parsnip	"	.865, 12°	Gerichten. Ber. 9, 259.
From Ptychotis ajowan	"	.854, 12°	Stenhouse. J. 9, 624.
From oil of rosemary	"	.8805, 20°	Gladstone. J. C. S. 17, 1.
From oil of sage. B. 155°	"	.8635*	Three isomers. Sigiura and Muir. J. C. S. 33, 292.
" " " B. 167°	"	.8866	
" " " B. 165°	"	.8653	
" " " B. 170°	"	.8653	
" " " "	"	.8667	
" " " "	"	.8632, 24°.5	Gladstone. J. C. S. 49, 623.
From Satureja hortensis	"	.855, 15°	Jahns. Ber. 15, 819.
From oil of thyme	"	.8635, 20°	Gladstone. J. C. S. 17, 1.
Thymene	"	.868, 20°	Lallemand. J. 9, 616.
"	"	.8635, 20°	Kanonnikoff. Bei. 7, 592.
From oil of wormwood	"	.8565, 20°	Gladstone. J. C. S. 17, 1.
Cajeputene. B. 165°	"	.850, 15°	Schmidl. J. 13, 481.
Isocajeputene. B. 177°	"	.857, 16°	Schmidl. J. 13, 482.
Camphene	"	.8481, 47°.7	Riban. B. S. C. 24, 9.
"	"	.8387, 58°.9	
"	"	.8211, 79°.7	
"	"	.8062, 97°.7	
"	"	.8345, 99°.84	
Camphilene	"	.87	Spitzer. Ber. 11, 1815.
Caoutchin	"	.855, 0°	Watts' Dictionary. Bouchardat. B. S. C. 24, 109.
"	"	.842, 20°	
"	"	.842, 20°	
Cicutene	"	.87038, 18°	Williams. J. 13, 495.
			Van Ankum. J. 21, 794.
Cinaebene	"	.878	Hirzel. J. 7, 592.
Cynene. B. 174°.5	"	.825, 16°	Völkkel. A. C. P. 89, 358.
"	"	.8500, 15°	Hell and Stürcke. Ber. 17, 1972.
"	"	.8238, 50°	
"	"	.7851, 100°	

\* Misprinted 0.8435. Corrected in later paper.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cynene, B. 182°	$C_{10}H_{16}$	.85684, 16°	Wallach and Brass, A. C. P. 225, 291.
From cynool, B. 179°	"	.85652	"
"	"	.85659	"
F. Blandrene	"	.8558, 10°	Pesol, G. C. 1, 16, 225.
Gaultherilene	"	.8510, 20°	Gladstone, J. C. S. 17, 1.
Gardilene	"	.842	Jacobsen, Z. C. 14, 171.
"	"	.843	"
Lienene	"	.835, 18°	Morin, J. C. S. 42, 737.
Macene	"	.8529, 17.5°	Schacht, J. 15, 461.
Oilbene	"	.866, 12°	Kurbatow, Z. C. 14, 291.
Safrene	"	.8315, 0°	Grimaux and Reotte, J. 22, 784.
Tolene	"	.858, 10°	E. Kopp, J. 1, 757.
Polymer of isoprene	"	.866, 0°	Bouchardat, Ber. S. 994.
"	"	.851, 21°	"
Polymer of valerylene	"	.826, 15°	"
From oil of calamus	$C_{15}H_{24}$	.9180	Gladstone, J. C. S. 17, 1.
" " "	"	.9275	"
" " "	"	.912, 0°	Kurbatow, A. C. P. 173, 1.
From oil of cascarrilla	"	.9212, 20°	Gladstone, J. C. S. 17, 1.
From oil of cedar	"	.9231, 18°	Gladstone, Ber. 9, 249.
From oil of cloves	"	.918, 18°	Ettling, Watts' Diet.
" " "	"	.9016, 14°	Williams, J. 11, 442.
" " "	"	.9011, 20°	Gladstone, J. C. S. 17, 1.
" " "	"	.905, 15°	Church, J. C. S. (2), 13, 115.
From oil of copaiva	"	.91	Poselt, J. 2, 455.
" " "	"	.881	Soubiran and Capitaine, Gm. H.
" " "	"	.885	"
" " "	"	.8978, 24°	Levy, Ber. 18, 3296.
From oil of cubeb	"	.915	"
" " "	"	.930	Schmidt.
" " "	"	.938	"
" " "	"	.9062, 20°	Gladstone, J. C. S. 17, 1.
" " "	"	.9286, 0°	Ogildore, Ber. S. 1357.
Cedrene	"	.981, 14.5°	Walter, Ann. 3, 1, 501.
"	"	.915, 15°	Muir, J. C. S. 37, 13.
"	"	.9231, 18°	Gladstone, J. C. S. (2), 10, 1.
From Dryobalanops camphora	"	.990	Lallemand, J. 12, 503.
" " "	"	.921	"
From gurgun balsam	"	.9014, 15°	Werner, J. 15, 461.
From oil of hemp	"	.9292, 0°	Valente, J. C. S. 40, 284.
From Laurus nobilis	"	.925, 15°	Bloss, J. 18, 569.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
From <i>Ledum palustre</i> -----	$C_{15}H_{24}$ -----	.9349, 0° -----	Rizza. Ber. 20, ref. 562.
“ “ “ -----	“ -----	.9237, 19° -----	
From maracaibo balsam -----	“ -----	.921, 10° -----	
Metatemplene -----	“ -----	1.037, 4° -----	Flückiger. J. 8, 646.
From <i>Myrtus pimenta</i> -----	“ -----	.98, 8° -----	Oeser. J. 17, 534.
From oil of patchouli -----	“ -----	.9211 -----	Gladstone. J. C. S. 17, 1.
“ “ “ -----	“ -----	.9255 -----	
“ “ “ -----	“ -----	.9278 -----	
“ “ “ -----	“ -----	.946, 0° -----	Montgolfier. Ber. 10, 234.
“ “ “ -----	“ -----	.937, 13°.5 -----	
From oil of rosewood -----	“ -----	.9042, 20° -----	Gladstone. J. C. S. 17, 1.
From oil of sage -----	“ -----	.9198, 0° -----	Sigiura and Muir. J. C. S. 33, 297.
“ “ -----	“ -----	.9137, 12° -----	
“ “ -----	“ -----	.9072, 24° -----	
“ “ -----	“ -----	.8970, 41° -----	
From oil of sandal wood -----	“ -----	.9190 -----	Gladstone. J. C. S. (2), 10, 1.
Sesquiterpene -----	“ -----	.921, 16° -----	Wallach. A. C. P. 238, 85.
From oil of vitivert -----	“ -----	.9332 -----	Gladstone. J. C. S. (2), 10, 1.
From copaiva oil -----	$C_{20}H_{32}$ -----	.892, 17° -----	Brix. Ber. 14, 2267.
From minjak-lagam oil -----	“ -----	.923, 15° -----	Haussner. Ber. 16, 1387.
From oil of poplar -----	“ -----	.9002 -----	Piccard. C. C. (3), 6, 4.
From tar-cumene -----	“ ? -----	.8850, 22° -----	Jacobsen. A. C. P. 184, 203.
Diterebene -----	“ -----	.94 -----	Watts' Dictionary.
Metaterebenthene -----	“ -----	.913, 20° -----	Berthelot. J. 6, 524.
Colophene -----	“ -----	.9391, 20° -----	Gladstone. J. C. S. 17, 1.
“ -----	“ -----	.94, 9° -----	Deville. P. A. 51, 439.
Difellandrene -----	“ -----	.9523, 10° -----	Pesci. G. C. I. 16, 225.
Hevéene -----	“ -----	.921, 21° -----	Bouchardat. A. C. P. 37, 30.
Tetraterebenthene -----	$C_{40}H_{64}$ ? -----	.977, 0° -----	Riban. C. R. 79, 391.

## 7th. Unclassified Hydrocarbons.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Heptanaphthene*	$C_7 H_{14}$	.7778, 0°	Milkowsky. Ber. 18, ref. 186.
"	"	.7624, 17°.5	
Octonaphthene	$C_8 H_{16}$	.7649, 0°	Markownikoff. Ber. 18, ref. 186.
"	"	.7503, 18°	
Isocetonaphthene	"	.7765, 0°	Putochin. Ber. 18, ref. 186.
"	"	.7768, 0°	
Nononaphthene	$C_9 H_{18}$	.7637, 17°.5	Markownikoff and Oglöblin. Ber. 16, 1877.
"	"	.7808, 0°	
"	"	.7808, 0°	Konowaloff. Ber. 18, ref. 186.
"	"	.7652, 26°	
Dekanaphthene	$C_{10} H_{20}$	.795, 0°	Markownikoff and Oglöblin. Ber. 16, 1877.
Endekannaphthene	$C_{11} H_{22}$	.8119, 0°	
Dodekanaphthene	$C_{12} H_{24}$	.8055, 14°	" "
Tetradekannaphthene	$C_{14} H_{28}$	.8360, 0°	" "
Pentadekannaphthene	$C_{15} H_{30}$	.8294, 17°	" "
Nononaphthylene	$C_9 H_{16}$	.8068, 0°	Konowaloff. Ber. 18, ref. 186.
Menthene	$C_{10} H_{18}$	.851, 21°	Walter. A. C. P. 32, 288.
"	"	.814, 15°	Moriya. J. C. S., March, 1881.
"	"	.8226, 0°	Atkinson and Yoshida. J. C. S. 41, 49.
"	"	.8145, 10°	
"	"	.8075, 20°	
"	"	.7909, 40°	
"	"	.7761, 60°	
From oil of calamus	"	.8796, 0°	Kurbatow. J. C. S. (2), 12, 259.
From turpentine chlorhydrate	"	.852, 19°	Montgolfier. Ber. 12, 376.
Cynhydrène	$C_{10} H_{20}$	.8046, 12°	Gladstone. J. C. S. 49, 616.
Terpène hydride	"	.8179, 0°	Montgolfier. C. R. 89, 103.
"	"	.8030, 17°.5	
Ethyl camphene	$C_{10} H_{18}$ , $C_7 H_8$	.8709, 20°	Spitzer. Ber. 11, 1817.
Isobutyl camphene	$C_{10} H_{18}$ , $C_4 H_6$	.8614, 20°	Spitzer. Ber. 11, 1818.
Camphon	$C_{18} H_{22}$	.827, 25°	Claus. J. P. C. 25, 269.
Ditercbenhtyl	$C_{20} H_{26}$	.9688, 18°	Renard. C. R. 105, 866.
Ditercbenhtylene	$C_{20} H_{24}$	.9821, 12°	Renard. C. R. 106, 856.
Dicamphene hydrate	$C_{20} H_{24}$	.9574, 19°	Montgolfier. C. R. 87, 840.

\* According to Konowaloff, the "naphthenes" are identical with the hexhydrides of the benzene series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Didecene	$C_{20}H_{36}$	.9362, 12°	Renard. C. R. 106, 1086.
Caoutchene	$C_4H_8$	.65, —2°	Bouchardat. A. C. P. 37, 30.
Tropilidene	$C_7H_8$	.9129, 0°	Ladenburg. A. C. P. 217, 133.
From copper camphorate	$C_8H_{14}$	.793	Moitessier. J. 19, 410.
From decomposition of phenol	$C_{10}H_{12}$	1.012, 17°.5, s.	Roscoe. J. C. S. 47, 669.
Eucalyptene	$C_{12}H_{18}$	.836, 12°	Cloëz. J. 23, 588.
Anthemene	$C_{18}H_{36}$	.942, 15°	Naudin. B. S. C. 41, 483.
Paranicene	$C_{10}H_{12}$	1.24	St. Evre. J. 1, 532.
Lekene	?	.93917	Beilstein and Wiegand. Ber. 16, 1548.
Könlite	$(C_6H_6)_n$	.88	Trommsdorf. A. C. P. 21, 126.
Hartite	$(C_3H_5)_n$	1.046	Haidinger. P. A. 54, 261.
From petroleum	$(C_7H_4)_n$	1.096, 15°	Prunier. Ann. (5), 17, 5.
Carbopetrocene	$(C_{10}H_2)_n$ or $(C_{12}H_2)_n$	1.235, 10°	" "

## XLVI. COMPOUNDS CONTAINING C, H, AND O.

## 1st. Alcohols of the Paraffin Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl alcohol	$CH_4O$	.798, 20°	Dumas and Peligot. Ann. (2), 58, 5.
" "	"	.807, 9°	Déville.
" "	"	.813	Regnault.
" "	"	.82704, 0°	Pierre. Ann. (3), 15, 325.
" "	"	.7938, 25°	Kopp. A. C. P. 55, 166.
" "	"	.81796, 0°	Kopp. P. A. 72, 53.
" "	"	.80307, 16°.9	
" "	"	.8065, 15°	Mendelejeff. J. 13, 7.
" "	"	.8052, 9°.5	Delffs. J. 7, 26.
" "	"	.8142, 0°	Kopp. A. C. P. 94, 257.
" "	"	.7997, 16°.4	
" "	"	.7973, 15°	Graham.
" "	"	.7995, 15°	Duclaux. Ann. (5), 13, 86.
" "	"	.8574, 21°	Linnemann. J. 21, 681.
" "	"	.81571, 10°	Dupré. P. A. 148, 236.
" "	"	.7964, 20°	Landolt.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl alcohol	$\text{C}_2\text{H}_4\text{O}$	.7907, 15°	Grodzki and Krämer. Z. A. C. 14, 103.
" "	"	.7984, 15°	Kramer and Grodzki. Ber. 9, 1929.
" "	"	.8008, 0°	Vincent and Delachanal. J. 1880, 396.
" "	"	.8014, 14°	De Heen. Bei. 5, 105.
" "	"	.7475 ( 61° 8' )	Schiff. G. C. I. 13, 177.
" "	"	.7477 ( " )	"
" "	"	.7953, 20°	Bruhl. Bei. 4, 781.
" "	"	.8111, 0°	Zander. A. C. P. 224, 88.
" "	"	.7483, 66° 2' )	"
" "	"	.810, 15°	Regnault and Villejean. C. R. 99, 82.
" "	"	.7961, 18°	Gladstone. Bei. 9, 249.
" "	"	.7923, 20°	Winkelmann. P. A. (2), 26, 195.
" "	"	.7931, 20°	Traube. Ber. 19, 879.
" "	"	.8612, 0°	Pagliani and Battelli. Bei. 10, 222.
" "	"	.78909, 22° 94'	Values given for every 10° from 80°
" "	"	.7135, 100°	to 238° 5. Ramsay and Young. P. T. 178, 313.
" "	"	.6494, 150°	"
" "	"	.5525, 200°	"
" "	"	.3642, 238° 5'	"
Ethyl alcohol*	$\text{C}_2\text{H}_6\text{O}$	.7924, 17° 9'	Gay Lussac.
" "	"	.7915, 18°	Dumas and Boullay. P. A. 12, 93.
" "	"	.8095, 0°	Darling.
" "	"	.7996, 15°	Kopp. A. C. P. 55, 166.
" "	"	.8150, 5°—10°	"
" "	"	.8113, 10°—15°	Regnault. P. A. 62, 50.
" "	"	.8072, 15°—20°	"
" "	"	.81087 ( 0° )	Kopp. P. A. 72, 62.
" "	"	.8095 ( " )	"
" "	"	.79821, 11°	"
" "	"	.7990, 14° 8'	"
" "	"	.8151, 0°	Pierre. Ann. (3), 15, 325.
" "	"	.7938, 15° 5'	Fownes. P. T. 1847, 249.
" "	"	.7897 ( 21° )	Wackenroder. J. 1, 682.
" "	"	.7905 ( " )	"
" "	"	.79381, 15° 6'	Drinkwater. J. 1, 682.
" "	"	.809, 5°	Delik. J. 7, 26.
" "	"	.8194, 19°	Wetherill. J. P. C. 60, 202.
" "	"	.7947, 15°	Pouillet. J. 12, 439.
" "	"	.7958, 15°	Mendelejeff. J. 13, 7.
" "	"	.8083, 0°	Mendelejeff. J. 14, 20.
" "	"	.7157, 99° 50'	"

\* For this compound there are so many determinations of specific gravity that absolute completeness with regard to them has not been attempted by the compiler.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl alcohol	$C_2H_6O$	.6796, 130°.9	Mendelejeff. J. 14, 20.
"	"	.7946 } 15°	Baumhauer. J. 13, 393.
"	"	.7947 }	
"	"	.80625, 0°	Mendelejeff. J. 18, 469.
"	"	.80207, 5°	
"	"	.79788, 10°	
"	"	.79367, 15°	
"	"	.78945, 20°	
"	"	.78522, 25°	
"	"	.78096, 30°	Linnemann. J. 21, 413.
"	"	.8086, 19°	
"	"	.8090, 17°	Linnemann. A.C.P. 160, 195.
"	"	.822, 20°	Pierre and Puchot. Ann. (4), 22, 260.
"	"	.79481, 11°	Erlemeyer. A.C.P. 162, 374.
"	"	.815, 0° 5°	Pierre. C. N. 27, 93.
"	"	.80214, 1.1	
"	"	.7946, 16°.03	Winkelmann. P. A. 150, 592.
"	"	.7339, 78°	Ramsay. J. C. S. 35, 463.
"	"	.8120, 0°	Vincent and Delachanal. J. 1880, 396.
"	"	.7995, 14°	De Heen. Bei. 5, 105.
"	"	.8019, 20°	{ Bedson and Williams. Ber. 14, 2550.
"	"	.7976, 25°	
"	"	.7381 }	{ Schiff. G. C. I. 13, 177.
"	"	.7382 }	
"	"	.7402 }	
"	"	.7403 }	
"	"	.7968, 20°	Nasini. G. C. I. 13, 135.
"	"	.8000, 20°	Bruhl. Bei. 4, 781.
"	"	.79603, 17°.86	{ Also intermediate values. Drecker. P. A. (2), 20, 870.
"	"	.77616, 40°.90	
"	"	.7882, 25°.3	Schall. Ber. 17, 2555.
"	"	.7899, 23°.4	
"	"	.79326, 15°	Squibb. C. N. 51, 33.
"	"	.7906, 20°	Winkelmann. P. A. (2), 26, 105.
"	"	.79175, 0°	Pagliani and Battelli. Bei. 10, 222.
"	"	.70606, 110°	{ Intermediate values given. Ramsay and Young. P. T. 1886, 129.
"	"	.5570, 200°	
"	"	.3109, 242°.9	
Propyl alcohol	$C_3H_8O$	.8198, 0°	Pierre and Puchot. Ann. (4), 22, 276.
"	"	.8125, 9°.6	
"	"	.7797, 50°.1	
"	"	.7494, 84°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Propyl alcohol	$C_3H_7O$	.813, 13 <sup>2</sup>	Chancel, A. C. P. 151, 302.
" "	"	.812, 16 <sup>2</sup>	Chapman and Smith, J. C. S. 22, 194.
" "	"	.823, 0 <sup>2</sup>	Savtzeff, Z. C. 13, 107.
" "	"	.8205, 0 <sup>2</sup>	Rossi, A. C. P. 159, 79.
" "	"	.8056, 15 <sup>2</sup>	Linnemann, A. C. P. 161, 26.
" "	"	.8198, 0 <sup>2</sup>	Pierre, C. N. 27, 93.
" "	"	.80825, 15 <sup>2</sup>	
" "	"	.8044, 20 <sup>2</sup>	Bruhl, Ber. 13, 1529.
" "	"	.8091, 11 <sup>2</sup>	De Heen, Bel. 5, 105.
" "	"	.8203, 0 <sup>2</sup>	Nacari and Pagliani, Bel. 6, 88. Values given at several intermediate t <sup>2</sup> s.
" "	"	.8127, 95, 71	
" "	"	.8001, 252, 16	
" "	"	.7898, 387, 18	
" "	"	.7773, 535, 10	
" "	"	.7640, 675, 16	
" "	"	.7550, 77, 69	
" "	"	.7385, 947, 10	
" "	"	.8177, 0	
" "	"	.7999, 975, 4	Zander, A. C. P. 214, 181.
" "	"	.8190, 20 <sup>2</sup>	Pagliani, Bel. 7, 450.
" "	"	.7965	Schiff, G. C. I. 13, 177.
" "	"	.7936, 975, 1	
" "	"	.7907	
" "	"	.8049, 20 <sup>2</sup>	Winkelmann, P. A. 2, 26, 105.
" "	"	.8051, 20 <sup>2</sup>	Traube, Ber. 1, 881.
Isopropyl alcohol	"	.791, 15 <sup>2</sup>	Linnemann, J. 18, 188.
" "	"	.7915, 167, 5	Siersch, A. C. P. 114, 111.
" "	"	.7876, 16 <sup>2</sup>	Linnemann, A. C. P. 161, 18.
" "	"	.7887, 20 <sup>2</sup>	Bruhl, A. C. P. 203, 1
" "	"	.797, 15 <sup>2</sup>	Duchaux, Ann. 55, 13, 89.
" "	"	.7993, 0 <sup>2</sup>	Zander, A. C. P. 214, 181.
" "	"	.7231, 82, 8	
" "	"	.7113, 81, 3	Schiff, G. C. I. 13, 177.
" "	"	.7114	
" "	"	.8076, 20	Traube, Ber. 19, 882.
Hydrate of isopropyl alcohol	$C_3H_7O + H_2O$	.800, 15	Linnemann, A. C. P. 136, 40.
" "	$C_3H_7O + 2 H_2O$	.832, 15 <sup>2</sup>	" "
Butyl alcohol, B. 117, 5	$C_4H_9O$	.829, 0 <sup>2</sup>	Savtzeff, Z. C. 13, 108.
" "	"	.8239, 0 <sup>2</sup>	Lieben and Rossi, A. C. P. 158, 137.
" "	"	.8165, 20 <sup>2</sup>	
" "	"	.7994, 10 <sup>2</sup>	
" "	"	.7738, 983, 7	
" "	"	.7735, 983, 9	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY
Butyl alcohol	$C_4H_{10}O$	.8112, 15°	{ Two samples. Linnemann. Ann. (4), 27, 268.
" "	"	.8135, 22°	
" "	"	.8152, 14°	DeHeen. Bei. 5, 105.
" "	"	.806, 15°	Pierre. C. N. 27, 93.
" "	"	.8099, 20°	{ Two lots. Brühl. A. C. P. 203, 1.
" "	"	.8096, 20°	
" "	"	.8233, 0°	Zander. A. C. P. 224, 88.
" "	"	.7247, 117°.5	{ Schiff. G. C. I. 13, 177.
" "	"	.7269 } 116°.7	
" "	"	.7270	
Isobutyl alcohol. B. 108°	"	.8032, 18°.5	Wurtz. A. C. P. 93, 107.
" "	"	.817, 0°	{ Pierre and Puchot. J. 21, 434.
" "	"	.809, 11°	
" "	"	.774, 55°	
" "	"	.732, 100°	
" "	"	.8055, 16°.8	Chapman and Smith. J. C. S. 22, 161.
" "	"	.8003, 18°	Linnemann. A. C. P. 160, 195.
" "	"	.8025, 19°	Linnemann. Ann. (4), 27, 268.
" "	"	.8167	{ Menschutkin. A. C. P. 195, 351.
" "	"	.8168	
" "	"	.8020	{ Brühl. Ber. 13, 1520.
" "	"	.8062	
" "	"	.8062, 0°	
" "	"	.8052, 14°.50	{ Naccari and Pagliani. Bei. 6, 89. Values given for several intermediate t's.
" "	"	.7927, 30°.71	
" "	"	.7800, 46°.56	
" "	"	.7608, 68°.97	
" "	"	.7497, 80°.86	
" "	"	.7295, 101°.97	
" "	"	.8064, 15°	Duclaux. Ann. (5), 13, 90.
" "	"	.7265, 106°.6	Schiff. G. C. I. 13, 177.
" "	"	.8062, 20°	Landolt. Bei. 7, 846.
" "	"	.79888, 26°.15	{ Schall. Ber. 17, 2555.
" "	"	.77844, 52°.2	
" "	"	.8024, 20°.5	Gladstone. Bei. 9, 249.
" "	"	.8031, 20°	Winkelmann. P. A. (2), 26, 105.
" "	"	.8029, 20°	Traube. Ber. 19, 883.
Methylethylcarbinol. B. 99°.	"	.85, 0°	De Luynes. Ann. (4), 2, 424.
" "	"	.827, 0°	{ Lieben. A. C. P. 150, 114.
" "	"	.810, 22°	
Trimethylcarbinol. B. 82°.5	"	.8075, 0°	{ Butlerow. Z. C. 14, 273.
" "	"	.7788, 30°	
" "	"	.7792, 37°	Linnemann. Ann. (4), 27, 268.
" "	"	.7864, 20°	{ Brühl. A. C. P. 203, 1.
" "	"	.7823, 24°	
" "	"	.7813, 25°	

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Trimethylcarbanol.	$C_4H_{10}O$	.7802, 26°	Bruhl. A. C. P. 203, 1.
Hydrate of trimethylcarbanol.	$C_4H_{10}O_2 \cdot H_2O$	.8276, 0	Barberow. Z. C. 14, 273.
Normal amyl alcohol.	$C_5H_{12}O$	.8296, 0°	
" " " B. 82°·5		.8168, 20°	
" " " " "		.8065, 40°	Lieben and Rossi. A. C. P. 159, 70.
" " " " "		.7885, 99°·15	
" " " " "		.8282, 0°	Zander. A. C. P. 224, 88.
" " " " "		.7117, 137°·85	
" " " " "		.8299, 0°	Gartenmeister. A. C. P. 233, 249.
Amyl alcohol.* B. 131°·5.		.8184, 15°	Calours. A. C. P. 30, 288.
" " " " "		.8137, 15°	Kepp. A. C. P. 55, 166.
" " " " "		.8271, 0°	Pierre. J. 1, 62.
" " " " "		.8185, 15°	Reckher. J. 1, 698.
" " " " "		.8253, 0°	
" " " " "		.8141, 15°·20	
" " " " "		.8127, 165·4	Kepp. P. A. 72, 227.
" " " " "		.8115, 14°	
" " " " "		.818, 14°	Delfs. J. 7, 26.
" " " " "		.8248, 0°	Kepp. A. C. P. 94, 257.
" " " " "		.8113, 18°·7	
" " " " "		.819, 18°	Schiff.
" " " " "		.8142, 15°	Mendeleeff. J. 13, 7.
" " " " "		.8148, 14°	From two sources.
" " " " "		.8199, 14°	Schorlemmer. J. 19, 527.
" " " " "		.826, 0°	Pierre and Puchot. Ann. (4), 22, 336.
" " " " "		.8204, 15°	Graham.
" " " " "		.8148, 15°	Duchaux. Ann. (5), 13, 91.
" " " " "		.8135, 20°	Landolt.
" " " " "		.8244, 0°	
" " " " "		.8141, 15°	Two products. Erdmeyer and Hell. A. C. P. 160, 257.
" " " " "		.8102, 21°·5	
" " " " "		.8263, 0°	
" " " " "		.8123, 19°·7	
" " " " "		.8253, 0°	Pierre. C. N. 27, 93.
" " " " "		.8146, 15°	
" " " " "		.8255, 0	Pierre and Puchot. B. S. C. 20, 370.
" " " Ordinary		.817	
" " " Less active.		.816, 15°	Ley. Ber. 6, 1392.
" " " More "		.808, 15°	
" " " " "		.8123, 20	Bruhl. Ber. 4, 781.
" " " " "		.8075, 14	DeHeen. Ber. 5, 105.
" " " " "		.8248, 0	Badham. Ber. 9, 1437.
" " " " "		.8104, 20°	Two lots. Bruhl. A. C. P. 203, 1.
" " " " "		.8103, 20°	
" " " " "		.8259, 0	Flawitzky. Ber. 15, 11.
" " " " "		.8085, 23°	

\* Ordinary, inactive, and a specific.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Amyl alcohol	$C_5H_{12}O$	.7221	Schiff. Ber. 14, 2768.
" "	"	.7223	
" "	"	.7154, 130°.5	Schiff. G. C. I. 13, 177.
" "	"	.8063, 26°.1	Schall. Ber. 17, 2555.
" "	"	.7729, 66°	
" "	"	.8114, 20°	Winkelmann P. A. (2), 26, 105.
" "	"	.8121, 20°	Traube. Ber. 19, 883.
" "	"	.8252, 0°	Pagliani and Battelli. Bei. 10, 222.
Methylpropylcarbinol.	"	.8249	Wurtz. Z. C. 11, 490.
" B. 119°	"	.8260	
" "	"	.833, 0°	Le Bel. Z. C. 14, 471.
" "	"	.8239, 0°	Biélohoubek. Ber. 9, 925.
" "	"	.8102, 20°	
" "	"	.827, 0°	{ Wagner and Saytzeff. A. C. P. 179, 320.
" "	"	.815, 18°	
Methylisopropylcarbinol.	"	.8308, 0°	Winogradow. A. C. P. 191, 125.
" B. 112°	"	.8219, 19°	
" "	"	.833, 0°	Wischnegradsky. A. C. P. 190, 340.
" "	"	.819, 19°	
Diethylcarbinol. B. 116°.5	"	.832, 0°	{ Wagner and Saytzeff. A. C. P. 175, 368.
" "	"	.819, 16°	
" "	"	.831, 0°	{ Wagner and Saytzeff. A. C. P. 179, 320.
" "	"	.816, 18°	
Dimethylethylcarbinol.	"	.829, 0°	Wurtz. A. C. P. 125, 114.
" B. 102°.5.	"	.828, 0°	
" "	"	.8258, 0°	Ermolaïen. Z. C. 14, 275.
" "	"	.810, 19°	
" "	"	.827, 0°	Flawitzky. A. C. P. 179, 349.
" "	"	.812, 19°	
" "	"	.827, 17°	Wischnegradsky. A. C. P. 190, 334.
" "	"	.7241, 101°.6	
Normal hexyl alcohol.	$C_6H_{14}O$	.820, 17°	Münde. Ber. 7, 1370.
" B. 157°.	"	.820, 17°	Schiff. G. C. I. 13, 177.
" "	"	.813, 0°	Pelouze and Cahours. J. 16, 527.
" "	"	.819	Buff. J. 21, 336.
" "	"	.833, 0°	Franchimont and Zincke. C. N. 24, 263.
" "	"	.8204, 20°	
" "	"	.8107, 40°	Lieben and Janacek. J. R. C. 5, 156.
" "	"	.813, 17°	
" "	"	.8312	Frentzel. Ber. 16, 745.
" "	"	.8327	
" "	"	.6958	{ Zander. A. C. P. 224, 88.
" "	"	.6982	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Normal hexyl alcohol	$C_6H_{14}O$	.8349, 0°	Gartenmeister, A. C. P. 233, 249.
Methyldiethylcarbinol	"	.8207, 20°	Reformatsky, J. P. C. (2), 36, 340.
"	"	.8194, 25°	
"	"	.8143, 30°	
"	"	.8104, 35°	
Methylpropylcarbylcarbinol. B. 147°.	"	.8296, 0°	Two lots. Lieben and Zeisel, M. C. 4, 32.
"	"	.8244, 23°.	
"	"	.8275, 0°	
"	"	.8257, 17°.6	
Methylbutylcarbinol, or secondary hexyl alcohol. B. 136°.	"	.8227, 0°	Wanklyn and Erlennmeyer, J. 16, 521.
"	"	.8209, 16°	
"	"	.7482, 99°	
"	"	.8266, 0°	
"	"	.8306, 0°	Two samples, Hecht, A. C. P. 165, 146.
"	"	.8307, 18°	Wislicenus, A. C. P. 219, 310.
Methylisobutylcarbinol	"	.8271, 0°	Kawschinow, Ber. 20, ref. 629.
"	"	.8183, 17°	
Ethylpropylcarbinol.	"	.8335, 0°	Volker, Ber. 8, 1049.
" B. 134°	"	.8188, 20°	
"	"	.8433, 0°	Oechner de Coninck, C. R. 82, 93.
"	"	.81825, 20°	
Isohexyl or caproyl alcohol. B. 150°.	"	.833, 0°	Faget, J. 6, 504.
"	"	.754, 100°	
"	"	.8295, 15°	Kobig, A. C. P. 195, 102.
Dimethylisopropylcarbinol. B. 117°.	"	.8364, 0°	Prischniukow, Z. C. 14, 275.
"	"	.8387, 0°	Pawlow, A. C. P. 196, 122.
"	"	.8232, 19°	
Methylethylpropyl alcohol.	"	.829, 15°	Romburgh, J. C. S. 52, 228.
Trimethylcarbylmethylcarbinol, or pinacolyl alcohol. B. 120°.5.	"	.8347, 0°	Friedel and Silva, J. C. S. (2), 11, 488.
Normal heptyl alcohol. B. 175°.5.	$C_7H_{16}O$	.792, 16°.5	Wills, J. 6, 508.
" " "	"	.819, 23°	Stadeler, J. 10, 361.
" " "	"	.838, 0°	
" " "	"	.830, 16°	Cross, J. C. S. 32, 123.
" " "	"	.824, 27°	
" " "	"	.8342, 0°	Zander, A. C. P. 224, 88.
" " "	"	.6876, 175°.8	
" " "	"	.8356, 0°	Gartenmeister, A. C. P. 233, 249.
Isoheptyl alcohol. ?	"	.8294, 13°.5	Four products from different sources.
" " B. 163°-168°	"	.795, 15°	
" " "	"	.8479, 16°	
" " "	"	.8286, 19°.5	
Dipropylcarbinol. B. 150°.	"	.814, 25°	Kurtz, A. C. P. 161, 205.
"	"	.81882, 20°	Ustinoff and Saytzed, J. P. C. (2), 34, 470.
"	"	.81064, 30°	
"	"	.80677, 35°	
Diisopropylcarbinol. B. 131°-132°.	"	.8323, 17°	Munde, Ber. 7, 1370.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethylisobutylcarbinol. B. 147°.5.	$C_7H_{16}O$ -----	.827, 0° -----	E. Wagner. B. S. C. 42, 330.
Methylamylcarbinol. B. 149°.	" -----	.8185, 17°.5 -----	Rohn. A. C. P. 190, 310.
Triethylcarbinol. B. 141°	" -----	.8593, 0° -----	Nahapetian. Z. C. 14, 274.
" -----	" -----	.83892, 20° -----	{ Barataeff and Sayt- zeff. J. P. C. (2), 34, 465.
" -----	" -----	.82992, 30° -----	
Methylethylpropylcarbi- nol.	" -----	.8233, 20° -----	Sokolow. Ber. 21, ref. 56.
Normal octyl alcohol. B. 196°.5.	$C_8H_{18}O$ -----	.830, 16° -----	Zincke. Z. C. 12, 55.
" " " -----	" -----	.8375, 0° -----	Zander. A. C. P. 224, 88.
" " " -----	" -----	.6807, 195°.5 -----	
" " " -----	" -----	.8369, 0° -----	Gartenmeister. A.C. P. 233, 249.
Methylhexylcarbinol, or capryl alcohol.	" -----	.823, 17° -----	Bouis. J. 7, 581.
" -----	" -----	.826, 16° -----	Pelouze and Ca- hours. J. 16, 529.
" -----	" -----	.823, 16° -----	Neison. J. C. S. (2), 13, 207.
" -----	" -----	.6589, 181° -----	Ramsay. J. C. S. 35, 463.
" -----	" -----	.8193, 20° -----	Brühl. A. C. P. 203, 1.
" -----	" -----	.6781 -----	{ Schiff. G. C. I. 13, 177.
" -----	" -----	.6782 -----	
" -----	" -----	.817 -----	Duclaux. Ann. (5), 13, 92.
"Octylene hydrate" -----	" -----	.811, 0° -----	Clermont. A. C. P. 149, 38.
" " -----	" -----	.793, 23° -----	
Primary isoöetyl alcohol. " " B. 179°.5.	" -----	.841, 0° -----	Williams. J. C. S. 35, 125.
" " " -----	" -----	.833, 12° -----	
" " " -----	" -----	.828, 20° -----	
" " " -----	" -----	.821, 30° -----	
" " " -----	" -----	.814, 40° -----	
" " " -----	" -----	.807, 50° -----	
" " " -----	" -----	.867, 100° -----	
Secondary isoöetyl alcohol. " " B. 161°.5.	" -----	.820, 15° -----	" "
" " " -----	" -----	.811, 30° -----	
" " " -----	" -----	.801, 40° -----	
" " " -----	" -----	.793, 100° -----	
Methyldipropylcarbinol	" -----	.82357, 20° -----	Gortloff and Saytz- eff. J. P. C. (2), 33, 202.
" -----	" -----	.81506, 30° -----	
" -----	" -----	.81080, 35° -----	
Diethylpropylcarbinol	" -----	.83794, 20° -----	Sokolow. Ber. 21, ref. 56.
Isodibutol. B. 147° -----	" -----	.8417, 0° -----	Butlerow. J. C. S. 34, 122.
Nonyl alcohol. B. 187° -----	$C_9H_{20}O$ -----	.835, 18°.5 -----	Lemoine. B. S. C. 41, 161.
Normal nonyl alcohol -----	" -----	.8415, 0° -----	Krafft. Ber. 19, 2221.
" " " -----	" -----	.8346, 10° -----	
" " " -----	" -----	.8279, 20° -----	
Ethyldipropylcarbinol	" -----	.83368, 20° -----	Tschebotareff and Saytzeff. J. P. C. (2), 33, 193.
" -----	" -----	.82583, 30° -----	
" -----	" -----	.82190, 35° -----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethylhexylecarbinol.	$C_9H_{20}O$	.839, 0°	Wagner. Ber. 17, ref. 316.
"    "    "    B. 195°	"    "    "    "	.825, 20°	
Normal decyl alcohol	$C_{10}H_{22}O$	.8389, 7°	Krafft. Ber. 16, 1714.
"    "    "    "	"    "    "    "	.8297, 20°	
"    "    "    "	"    "    "    "	.7734, 98°·7	
Decyl alcohol. B. 200°	"    "    "    "	.858, 18°·5	Lemoine. B. S. C. 41, 161.
Isodecyl alcohol. B. 203°	"    "    "    "	.8569, 0°	Borodin. J. 17, 238.
Propylhexylecarbinol.	"    "    "    "	.839, 0°	E. Wagner. B. S. C. 42, 339.
"    "    "    "    B. 210°	"    "    "    "	"    "    "    "	Giesecke. Z. C. 13, 431.
Methylnonylcarbinol.	$C_{11}H_{24}O$	.8268, 19°	Krafft. Ber. 16, 1714.
Normal dodecyl alcohol	$C_{12}H_{26}O$	.8309, 24°	
"    "    "    "	"    "    "    "	.8201, 40°	
"    "    "    "	"    "    "    "	.7781, 99°	"    "
Normal tetradecyl alcohol.	$C_{14}H_{30}O$	.8236, 38°	
"    "    "    "	"    "    "    "	.8153, 50°	
"    "    "    "	"    "    "    "	.7813, 98°·9	Perkin, Jr. J. C. S. 43, 77.
Isomer of myristic alcohol. B. 270°—275°	"    "    "    "	.8368, 15°	
"    "    "    "	"    "    "    "	.8301, 30°	
"    "    "    "	"    "    "    "	.8279, 35°	Krafft. Ber. 16, 1714.
Normal hexadecyl alcohol	$C_{16}H_{34}O$	.8176, 49°·5	
"    "    "    "	"    "    "    "	.8105, 60°	
"    "    "    "	"    "    "    "	.7837, 98°·7	"    "
"    "    "    "	"    "    "    "	"    "    "    "	
"    "    "    "	"    "    "    "	"    "    "    "	
"    "    "    "	"    "    "    "	.8185, 49°·5	"    "
Normal octadecyl alcohol	$C_{18}H_{38}O$	.8124, 59°	
"    "    "    "	"    "    "    "	.8018, 70°	
"    "    "    "	"    "    "    "	.7849, 99°·1	

## 2d. Oxides of the Paraffin Series.\*

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl ethyl oxide	$C_2H_5, C_2H_5, O$	.7252, 0°	Dobriner. A. C. P. 243, 1.
"    "    "    "	"    "    "    "	.7127, 10°·8	
Ethyl oxide, or ether	$(C_2H_5)_2O$	.7119, 24°·8	Gay Lussac. Dumas and Boullay. Ann. (2), 36, 294.
"    "    "    "	"    "    "    "	.713, 20°	
"    "    "    "	"    "    "    "	.739, 12°·5	Muncke. M. St. P. Sav. Et. 1, 1831, 249.
"    "    "    "	"    "    "    "	.73568, 0°	Kopp. P. A. 72. 231.
"    "    "    "	"    "    "    "	.72895, 6°·9	
"    "    "    "	"    "    "    "	.7297, 5°—10°	Regnault. P. A. 62, 50.
"    "    "    "	"    "    "    "	.7241, 10°—15°	
"    "    "    "	"    "    "    "	.7185, 15°—20°	
"    "    "    "	"    "    "    "	.73574, 0°	Pierre. C. R. 27, 213.
"    "    "    "	"    "    "    "	.728, 7°	Delfs. J. 7, 26.

\* All of Dobriner's ethers represent normal paraffins.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl oxide, or ether	$(C_2 H_5)_2 O$	.73644, 0°	Intermediate values given. Mendelejeff. A. C. P. 119, 1.
" " "	"	.63987, 78° 3	
" " "	"	.60896, 99° 9	
" " "	"	.55958, 131° 6	Matthiessen and Hockin.
" " "	"	.51735, 157°	
" " "	"	.7271, 10° 2	
" " "	"	.7204, 15° 8	Ramsay. J. C. S. 35, 463.
" " "	"	.6956, 34° 5	
" " "	"	.7157, 20°	Brühl. Ber. 13, 1530.
" " "	"	.7197, 15°	Buchan. C. N. 51, 94.
" " "	"	.73128, 4°	Squibb. C. N. 51, 67 and 76.
" " "	"	.71888, 15°	
" " "	"	.73590, 0°	
" " "	"	.7304, 5°	Oudemans. Ber. 19, ref. 2.
" " "	"	.7248, 10°	
" " "	"	.7192, 15°	
" " "	"	.7135, 20°	
" " "	"	.7077, 25°	
" " "	"	.7019, 30°	
" " "	"	.6960, 35°	
" " "	"	.6704, 50°	Also values for every 5° from 0° to 193°.
" " "	"	.6105, 100°	
" " "	"	.5179, 150°	
" " "	"	.3030, 193°	
" " "	"	.2463, at critical t°	
Methyl propyl oxide	$C H_3, C_3 H_7, O$	.7471, 0°	Ramsay and Young. P. M. 1887, 458.
" " "	"	.70415, 38° 9	Dobriner. A. C. P. 243, 1.
Ethyl propyl oxide	$C_2 H_5, C_3 H_7, O$	.7386, 20°	Brühl. Bei. 4, 779.
" " "	"	.7545, 0°	Dobriner. A. C. P. 243, 1.
" " "	"	.6871, 63° 6	
Ethyl isopropyl oxide	"	.7447, 0°	Markownikoff. A. C. P. 138, 374.
Methyl butyl oxide	$CH_3, C_4 H_9, O$	.7635, 0°	Dobriner. A. C. P. 243, 1.
" " "	"	.6901, 70° 3	
Propyl oxide	$(C_3 H_7)_2 O$	.7633, 0°	Zander. A. C. P. 214, 181.
" " "	"	.6743, 90° 7	
Isopropyl oxide	"	.7435, 0°	" "
" " "	"	.6715, 69°	
Ethyl butyl oxide	$C_2 H_5, C_4 H_9, O$	.7694, 0°	Lieben and Rossi. A. C. P. 158, 137.
" " "	"	.7522, 20°	
" " "	"	.7367, 40°	Saytzeff.
" " "	"	.761, 0°	
" " "	"	.7680, 0°	Dobriner. A. C. P. 243, 1.
" " "	"	.6785, 91° 4	
Ethyl isobutyl oxide	"	.7507, 0°	Wurtz. J. 7, 574.
Methyl amyl oxide	$C H_3, C_5 H_{11}, O$	.6871, 91°	Schiff. Bei. 9, 559.
Ethyl isoamyl oxide	$C_2 H_5, C_5 H_{11}, O$	.8036, 14° 7	Mendelejeff. J. 13, 7.
" " "	"	.764, 18°	Reboul and Truchot. J. 20, 582.
Tertiary ethylamyl oxide	"	.759, 21°	" "
" " "	"	.7785, 0°	Kondakoff. Ber. 20, ref. 549.
" " "	"	.751, 18°	
Propyl butyl oxide	$C_3 H_7, C_4 H_9, O$	.7773, 0°	Dobriner. A. C. P. 243, 1.
" " "	"	.6638, 117° 1	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Butyl oxide	$(C_4H_9)_2O$	.784, 0°	Lieben and Rossi, A. C. P. 165, 109. Dobriner. A. C. P. 243, 1.
" "	"	.7685, 20°	
" "	"	.7559, 40°	
" "	"	.7865, 0°	
" "	"	.6575, 140°·9	
Isobutyl oxide	"	.7697, 0°	Puchot, Ann. (5), 28, 521-528. Four samples.
" "	"	.7294, 46°·4	
" "	"	.7040, 74°·3	
" "	"	.766, 0°	
" "	"	.724, 48°·75	
" "	"	.770, 0°	Kessler. A. C. P. 175, 55.
" "	"	.734, 42°	
" "	"	.7678, 0°	
Secondary butyl oxide	"	.756, 21°	
Ethyl hexyl oxide	$C_2H_5, C_6H_{13}, O$	.7752, 16°·5	Schorlemmer. J. C. S. 19, 357. Reboul and Truchot, J. 20, 582.
" "	"	.7638, 30°	
" "	"	.7341, 63°	
" "	"	.776, 13°	
Diethyl-ethyl oxide	"	.7865, 0°	
" "	"	.7702, 20°	Lieben. A. C. P. 178, 14. Dobriner. A. C. P. 243, 1.
" "	"	.7574, 40°	
Methyl heptyl oxide	$C_2H_5, C_7H_{15}, O$	.7653, 0°	
Ethyl heptyl oxide	$C_2H_5, C_7H_{15}, O$	.6667, 140°·8	
" "	"	.7949, 0°	
" "	"	.65065, 160°·6	Cross. J. C. S. 31, 123. Dobriner. A. C. P. 243, 1. Wills. J. 6, 510. Rieckher, J. 1, 698. Wurtz. J. 9, 654. Dobriner. A. C. P. 243, 1.
" "	"	.790, 16°	
" "	"	.791, 16°	
Methyl octyl oxide	$C_2H_5, C_8H_{17}, O$	.8044, 0°	
" "	"	.65386, 173°	
Methyl capryl oxide	"	.830, 16°·5	Moslinger. Ber. 9, 1003. Dobriner. A. C. P. 243, 1. Wills. J. 6, 510. Dobriner. A. C. P. 243, 1.
Amyl oxide	$(C_5H_{11})_2O$	.779	
" "	"	.7964, 0°	
Propyl heptyl oxide	$C_3H_7, C_7H_{15}, O$	.7987, 0°	
" "	"	.6420, 187°·6	
Ethyl octyl oxide	$C_2H_5, C_8H_{17}, O$	.794, 17°	Dobriner. A. C. P. 243, 1. Wills. J. 6, 510. Dobriner. A. C. P. 243, 1.
" "	"	.8008, 0°	
" "	"	.6390, 180°·2	
" "	"	.791, 16°	
Ethyl capryl oxide	"	.8023, 0°	
Butyl heptyl oxide	$C_4H_9, C_7H_{15}, O$	.6327, 205°·7	Dobriner. A. C. P. 243, 1. Wills. J. 6, 510. Dobriner. A. C. P. 243, 1.
" "	"	.8039, 0°	
Propyl octyl oxide	$C_3H_7, C_8H_{17}, O$	.6300, 207°	
Butyl octyl oxide	$C_4H_9, C_8H_{17}, O$	.8069, 0°	
" "	"	.6277, 225°·7	
Amyl capryl oxide	$C_5H_{11}, C_8H_{17}, O$	.608, 20°	Moslinger. Ber. 9, 1001. Dobriner. A. C. P. 243, 1.
Normal heptyl oxide	$C_7H_{15}\frac{1}{2}O$	.8152, 0°	
" "	"	.6055, 261°·9	
Heptyl octyl oxide	$C_7H_{15}, C_8H_{17}, O$	.8182, 0°	
" "	"	.6038, 278°·8	
Normal octyl oxide	$(C_8H_{17})_2O$	.8035	Moslinger. Ber. 9, 1001. Dobriner. A. C. P. 243, 1.
" "	"	.8050, 17°	
" "	"	.82035, 0°	
" "	"	.6983, 291°·7	
" "	"		

## 3d. The Fatty Acids.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Formic acid	$C H_2 O_2$	1.2353	Liebig. Gm. H.
" "	"	1.2227, 0°	Kopp. P. A. 72, 248.
" "	"	1.2067, 13°.7	
" "	"	1.2211, 20°	Landolt. P. A. 117,
" "	"		353.
" "	"	1.2211	Semenoff. Ann. (4),
" "	"	1.2165	
" "	"	1.24482, 0°	Petterson. U. N. A.
" "	"		1879.
" "	"	1.2188, 20°	Brühl. Bei. 4, 781.
" "	"	1.2415, 0°	Zander. A. C. P.
" "	"	1.1175, 100°.8	
" "	"	1.2191, 20°	Winkelmann. P. A.
" "	"		(2), 26, 105.
" "	"	1.2182, 22°	Lüdeking. P. A. (2),
" "	"		27, 72.
" "	"	1.1170, 100°.3	Schiff. Ber. 19, 560.
" "	"	1.2190, 20°	Traube. Ber. 19, 884.
" "	"	1.22734, 15°	Perkin. J. C. S. 49,
Acetic acid	$C_2 H_4 O_2$	1.0630, 16°	Mollerat. Ann. (1),
" "	"		68, 88.
" "	"	1.0622	Sebille-Auger.
" "	"		Watts' Diet.
" "	"	1.0635, 15°	Mohr. A. C. P. 31,
" "	"		277.
" "	"	1.100, 8°.5, s.	Persoz. Watts'
" "	"	1.0650, 13°.1	
" "	"	1.0647, 5°-10°	Diet.
" "	"	1.0591, 10°-15°	
" "	"	1.0535, 15°-20°	Regnault. P. A.
" "	"	1.08005, 0°	
" "	"	1.06195, 17°	Kopp. P. A. 72, 253.
" "	"	1.0635, 10°	
" "	"		Delffs. A. C. P. 92,
" "	"		277.
" "	"	1.0607, 15°	Mendelejeff. J. 13, 7.
" "	"	1.0563	Roscoe. J. C. S. 15,
" "	"	1.0565	
" "	"	1.0514, 20°	Landolt. P. A. 117,
" "	"		353.
" "	"	1.05533, 15°	Oudemans. Z. C.
" "	"		1866, 750.
" "	"	1.0626, 20°	Linnemann. A. C.
" "	"		P. 160, 216.
" "	"	1.0502	Landolt. Ber. 9, 907.
" "	"	1.0490, 18°	Kohlrausch. P. A.
" "	"		159, 240.
" "	"	.9325, 113°	Ramsay. J. C. S. 35,
" "	"		463.
" "	"	1.0635, 15°	Duclaux. Ann. (5),
" "	"		13, 95.
" "	"	1.1149, 0°, s.	Petterson. U.N.A.
" "	"	1.0576, 12°.79	
" "	"	1.0543, 15°.97	
" "	"	1.0503, 19°.03	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acetic acid	$C_2H_4O_2$	1.0559, 20°	Bedson and Williams, Ber. 14, 2550.
" "	"	1.0495, 20°	Bruhl, Ber. 4, 781.
" "	"	1.0701, 0°	Zander, A. C. P. 224.
" "	"	.9372, 118°.1	88.
" "	"	1.0532, 20°	Winkelmann, P. A. (2), 26, 105.
" "	"	1.0465, 22°	Lüdeking, P. A. (2), 27, 72.
" "	"	1.05704, 15°	Perkin, J. C. S. 49, 777.
Propionic acid	$C_3H_6O_2$	1.0161, 0°	Kopp, A. C. P. 95.
" "	"	.9911, 25°.2	307.
" "	"	.9963, 20°	Landolt, P. A. 117, 353.
" "	"	.992, 18°	Linnemann, J. 21, 433.
" "	"	.9961, 19°	Linnemann, A. C. P. 160, 195.
" "	"	1.0143, 0°	
" "	"	.9607, 49°.6	Pierre and Puchot, B. S. C. 18, 453.
" "	"	.9962, 99°.8	
" "	"	.9946, 20°	Bruhl, Ber. 13, 1530.
" "	"	1.0199, 0°	Zander, A. C. P. 214.
" "	"	.8657, 140°.7	181.
" "	"	1.0133, 0°	
" "	"	.8589, 140°.5	Zander, A. C. P. 224, 88.
" "	"	.8599, 140°.5	
" "	"	.9939, 20°	Winkelmann, P. A. (2), 26, 105.
" "	"	.9902, 25°	Lüdeking, P. A. (2), 27, 72.
" "	"	.9956, 20°	Traube, Ber. 19, 885.
" "	"	1.0089, 0°	Renard, C. R. 103, 158.
" "	"	.9904, 18°	
" "	"	.99833, 15°	Perkin, J. C. S. 49, 777.
Butyric acid, B. 163°	$C_4H_8O_2$	.9675, 25°	Chevreul.
" "	"	.963, 15°	Pelouze and Gélis, P. A. 59, 625.
" "	"	.98165, 0°	Pierre, C. R. 27, 213.
" "	"	.9673, 15°	Mendeleeff, J. 13, 7.
" "	"	.9610, 20°	Landolt, P. A. 117, 353.
" "	"	.9850, 13°.5	Bulk, A. C. P. 139, 62.
" "	"	.9580, 14°	Linnemann, A. C. P. 160, 195.
" "	"	.9601, 14°	Linnemann, Ann. (1), 27, 268.
" "	"	.974, 15°	Graham, A. C. P. 123, 99.
" "	"	.9587, 20°	Bruhl, A. C. P. 203, 1.
" "	"	.9594, 20°	Landolt, Ber. 7, 845.
" "	"	.8141, 161°.5	Schiff, G. C. 1, 13, 177.

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Butyric acid	$C_4H_8O_2$	.9746	} Zander. A. C. P. 224, 88.
" "	"	.9781	
" "	"	.8099	
" "	"	.8120	
" "	"	.9603, 20°	
" "	"	.9549, 25°	Winkelmann. P. A. (2), 26, 105.
" "	"	.9809, 0°	Lüdeking. P. A. (2), 27, 72.
" "	"	.9624, 20°	Gartenmeister. A. C. P. 233, 249.
Isobutyric acid. B. 154°	"	.98862, 0°	Traube. Ber. 19, 885.
" "	"	.9739, 15°	} Kopp. P. A. 72, 258.
" "	"	.973, 7°	
" "	"	.9598, 0°	Delffs. A. C. P. 92, 277.
" "	"	.9208, 50°	} Markownikoff. A. C. P. 138, 368.
" "	"	.8965, 100°	
" "	"	.9503, 20°	
" "	"	.9697, 0°	} Linnemann. Ann. (4), 27, 268.
" "	"	.9160, 52° 6	
" "	"	.8665, 99° 8	
" "	"	.8220, 139° 8	
" "	"	.9490, 20°	Pierre and Puchot. B. S. C. 19, 72.
" "	"	.9515, 20°	Brühl. Ber. 13, 1529.
" "	"	.8087, 153°	Brühl. A. C. P. 200, 180.
" "	"	.9651, 0°	Schiff. G. C. I. 13, 177.
" "	"	.8054, 154°	} Zander. A. C. P. 224, 88.
" "	"	.9519, 20°	
Normal valeric acid.	$C_5H_{10}O_2$	.9577, 0°	} Traube. Ber. 19, 886.
" " " B. 185°	"	.9415, 20°	
" " " "	"	.9284, 40°	
" " " "	"	.9034, 99° 3	
" " " "	"	.945, 17° 5	Lieben and Rossi. A. C. P. 159, 58.
" " " "	"	.7569, 195°	Cahours and Demar- çay. C. R. 89, 331.
" " " "	"	.9608, 0°	Ramsay. J. C. S. 35, 463.
" " " "	"	.9448, 20°	} Kehler and Tollens. A. C. P. 206, 239.
" " " "	"	.9562, 0°	
" " " "	"	.7828, 185° 4	Zander. A. C. P. 224, 88.
" " " "	"	.9568, 0°	Gartenmeister. A. C. P. 233, 249.
Isovaleric acid.* B. 175°	"	.941, 14°	} Chevreul.
" " " "	"	.932, 28°	
" " " "	"	.944, 10°	Trommsdorf. A. C. P. 6, 176.
" " " "	"	.930, 12° 5	} Trautwein. Gm. H. Dumas and Stas. J. P. C. 21, 267.
" " " "	"	.937, 16° 5	
" " " "	"	.9402, 15°	Personne. J. 7, 653.
" " " "	"	.9555, 0°	} Kopp. A. C. P. 95, 307.
" " " "	"	.9378, 19° 6	

\* Including ordinary and unspecified valerianic acid.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isovaleric acid	$C_5H_{10}O_2$	.935, 15°	Delbfs. A. C. P. 92, 277.
" "	"	.9558, 15°	Mendelejeff. J. 13, 7.
" "	"	.9313, 20°	Landolt. P. A. 117, 353.
" "	"	.95357, 0°	Franklund and Duppa. J. 20, 396.
" "	"	.9470, 0°	Pierre and Puchot. B. S. C. 19, 72.
" "	"	.8972, 54°.65	
" "	"	.8542, 99°.9	
" "	"	.8095, 147°.5	
" "	"	.9165, 0°	
" "	"	.9285, 20°.2	From different sources. Erlennmeyer and Hell. A. C. P. 160, 257.
" "	"	.9468, 0°	
" "	"	.9295, 19°.7	
" "	"	.9462, 0°	
" "	"	.9299, 18°.8	
" "	"	.917, 15°	Ley. Ber. 6, 1362.
" "	"	.93087, 17°.4	Schmidt and Sachtleben.
" "	"	.9345, 15°	Poetsch. A. C. P. 218, 56.
" "	"	.9297, 20°	Winkelmann. P. A. (2), 26, 105.
" "	"	.941, 16°	Renard. Ann. (6), 1, 223.
" "	"	.9318, 20°	Traube. Ber. 19, 886.
Ethylmethylacetic acid, or active valeric acid. B. 172°.5.	{	"	{ Erlennmeyer and Hell. A. C. P. 160, 257.
		"	
" " "	"	.9505, 0°	{
" " "	"	.9331, 19°.5	
" " "	"	.938, 24°	Saur. A. C. P. 188, 275.
" " "	"	.917, 15°	Ley. Ber. 6, 1362.
" " "	"	.941, 21°	Pagenstecher. A. C. P. 195, 118.
" " "	"	.948, 14°.5	Lescœur. J. C. S. 31, 589.
" " "	"	.9405, 17°	Schmidt. Ber. 12, 257.
Trimethyl acetic acid	"	.944, 0°	Butlerow. Ber. 7, 728.
Normal caproic acid.	$C_6H_{12}O_2$	.922, 26°	Chevreul.
" " B. 205°	"	.931, 15°	Fehling. A. C. P. 33, 406.
" " "	"	.9449, 0°	Lieben and Rossi. A. C. P. 159, 70.
" " "	"	.9294, 20°	
" " "	"	.9172, 40°	
" " "	"	.8947, 99°.1	
" " "	"	.9438, 0°	Lieben. A. C. P. 170, 89.
" " "	"	.928, 20°	
" " "	"	.9164, 40°	
" " "	"	.933, 23°	Calours and Demarcay. C. R. 89, 331.
" " "	"	.9416, 0°	Zander. A. C. P. 224, 88.
" " "	"	.9449, 0°	Gartenmeister. A. C. P. 233, 249.
" " "	"	.9453, 0°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isocaproic acid. B. 199°	$C_6H_{12}O_2$	.9252, 20°	Landolt. P. A. 117, 353.
“ “	“	.9237, 20°	Brühl. Bei. 4, 781.
Diethylacetic acid. B. 190°	“	.925, 27°	Sticht. J. 21, 522.
“ “	“	.945	Schnapp. Ber. 10, 1954.
“ “	“	.9355, 0°	Saytzeff. Ber. 11, 512.
“ “	“	.9196, 18°	
Methylpropylacetic acid. B. 193°	“	.9414, 0°	“ “
“ “	“	.9279, 18°	
“ “	“	.9231, 25°	Liebermann and Scheibler. Ber. 16, 1823.
“ “	“	.9286, 15°	Liebermann and Kleemann. Ber. 17, 918.
Methylisopropylacetic acid	“	.928, 15°	Romburgh. J. C. S. 52, 232.
Methylethylpropionic acid	“	.930, 15°	Romburgh. J. C. S. 52, 228.
Oenanthalic acid. B. 223°	$C_7H_{14}O_2$	.9167, 24°	Städeler. J. 10, 360.
“ “	“	.9179, 18°	Landolt. P. A. 117, 353.
“ “	“	.9175, 20°	
“ “	“	.9212, 24°	Franchimont. A. C. P. 165, 237.
“ “	“	.9345, 0°	Grimshaw and Schorlemmer. A. C. P. 170, 137.
“ “	“	.9278, 8°	
“ “	“	.9208, 16°	
“ “	“	.9110, 28°	
“ “	“	.9359, 0°	“ “
“ “	“	.9348, 9°	
“ “	“	.9235, 28°	
“ “	“	.916, 21°	Mehlis. A. C. P. 185, 362.
“ “	“	.935, 0°	Lieben and Janacek. J. R. C. 5, 156.
“ “	“	.9198, 20°	
“ “	“	.9084, 40°	
“ “	“	.924, 21°	Cahours and Demarcay. C. R. 89, 331.
“ “	“	.9160, 20°	Brühl. Bei. 4, 781.
“ “	“	.9313, 0°	Zander. A. C. P. 224, 88.
“ “	“	.7429, 223°.2	
“ “	“	.9333, 0°	Gartenmeister. A. C. P. 233, 249.
Isoheptylic acid. B. 211°.5	“	.9305, 0°	Hecht. A. C. P. 209, 315.
“ “	“	.9138, 21°	
“ “	“	.8496, 100°	
Isoamylacetic acid. B. 217°	“	.9260, 15°	Poetsch. A. C. P. 218, 56.
Caprylic acid. B. 236°.5	$C_8H_{16}O_2$	.911, 20°	Fehling. A. C. P. 53, 401.
“ “	“	.905, 21°	Perrot. J. 10, 353.
“ “	“	.901, 18°	Fischer. A. C. P. 118, 307.
“ “	“	.923, 17°	Cahours and Demarcay. C. R. 89, 331.
“ “	“	.9270, 0°	Zander. A. C. P. 224, 88.
“ “	“	.7264, 236°.5	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Caprylic acid	$C_8H_{16}O_2$	.9288, 6°	Gartenmeister, A. C. P. 233, 249.
Isooctylic acid. B. 219°	"	.926, 6°	Williams, J. C. S. 35, 125.
" "	"	.911, 20°	
" "	"	.903, 30°	
" "	"	.893, 40°	
" "	"	.885, 50°	
" "	"	.846, 100°	Burton, A. C. J. 3, 389.
Dipropylacetic acid. B. 219° .5.	"	.9215, 6°	
Pelargonic acid. B. 253°	$C_9H_{18}O_2$	.903, 21°	Perrot, J. 10, 353.
" "	"	.9065, 17°	Franchimont and Zinke, C. N. 25, 57.
" "	"	.90656	From six different sources. Bergmann, Arch. Pharm. 22, 331.
" "	"	.90638	
" "	"	.90630	
" "	"	.90639	
" "	"	.90621	
" "	"	.90609	Kraft, Ber. 15, 1687.
" "	"	.9109, 12° .5	
" "	"	.9068, 17° .5	
" "	"	.9133, 99° .3	Gartenmeister, A. C. P. 233, 249.
" "	"	.9082, 6°	
Isononylic acid. B. 245°	"	.90325, 18°	Kullhem, A. C. P. 173, 319.
Rutyllic acid	$C_{10}H_{20}O_2$	.930, 37° .1	Fischer, A. C. P. 118, 307.
Lauric acid	$C_{12}H_{24}O_2$	.883, 20° .8	Görges, A. C. P. 66, 306.
Stearic acid	$C_{18}H_{36}O_2$	1.01, 0° .8	Saussure, Watts' Diet.
" "	"	.854, 1.1	Kopp, J. 8, 43.
" "	"	.8100, 9°	
" "	"	.8521, 69° .5	Schiff, A. C. P. 223, 247.

## 4th. Anhydrides of the Fatty Acids.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acetic anhydride	$C_4H_6O_3$	1.073, 20° .5	Gerhardt, J. 5, 431.
" "	"	1.0669, 0° .2	Kopp, A. C. P. 94, 257.
" "	"	1.0799, 15° .2	
" "	"	1.075, 15°	Schlagdenhauffen.
" "	"	1.0793, 15°	Mendelejeff, J. 13, 7.
" "	"	1.0787, 20°	Nasini, Ber. 14, 1513.
" "	"	1.0816, 20°	Bruhl, Bei. 4, 782.
Propionic anhydride	$C_6H_{10}O_3$	1.01, 18°	Linnemann, J. 21, 433.
" "	"	1.0169, 15°	Perkin, J. C. S. (2), 13, 11.
Butyric anhydride	$C_8H_{14}O_3$	.978, 12° .5	Gerhardt, J. 5, 432.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isobutyric anhydride	$C_8 H_{14} O_3$	.9574, 16°.5	Toennies and Staub. Ber. 17, 851.
Valeric anhydride	$C_{10} H_{18} O_3$	.934, 15°	Watts' Dictionary.
Oenanthic anhydride	$C_{14} H_{26} O_3$	.91, 14°	Malerba. J. 7, 444.
"	"	.932, 21°	Mehlis. A. C. P. 185, 371.

5th. Ethers of the Series  $C_n H_{2n} O_2$ .

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl formate	$C H_3, C H O_2$	.9984, 0°	Kopp. P. A. 72, 261.
"	"	.9776, 15°.3	
"	"	.9766, 16°	
"	"	.9928, 0°	Volhard. A. C. P. 176, 135.
"	"	.9797, 15°	Kraemer and Grodzki. Ber. 9, 1928.
"	"	.9482, 33°	Ramsay. J. C. S. 35, 463.
"	"	.9767, 14°	De Heen. Bei. 5, 105.
"	"	.9566, 32°.3	Schiff. G. C. I. 13, 177.
"	"	.99839, 0°	Elsässer. A. C. P. 218, 302.
"	"	.95196, 32°.3	
Ethyl formate	$C_2 H_5, C H O_2$	.9157, 18°	Gehler. See Böttger.
"	"	.912	Liebig. Quoted by Kopp.
"	"	.94474, 0°	Kopp. P. A. 72, 266.
"	"	.92546, 15°.7	
"	"	.9394, 0°	
"	"	.9188, 17°	" "
"	"	.93565, 0°	Pierre. C. R. 27, 213.
"	"	.917	Löwig. J. 14, 599.
"	"	.8649, 55°	Ramsay. J. C. S. 35, 463.
"	"	.9064, 20°	Brühl. Ber. 13, 1530.
"	"	.9214, 14°	De Heen. Bei. 5, 105.
"	"	.9367, 0°	Several intermediate values given. Nac- cari and Pagliani. Bei. 6, 89.
"	"	.9238, 10°.84	
"	"	.9122, 20°.03	
"	"	.8959, 32°.79	
"	"	.8865, 40°.02	
"	"	.8740, 49°.76	
"	"	.8707, 51°.94	{ Schiff. G. C. I. 13, 177.
"	"	.8730	
"	"	.8731	
"	"	.93757, 0°	Elsässer. A. C. P. 218, 302.
"	"	.86667, 54°.4	
"	"	.9194	Winkelmann. P. A. (2), 26, 105.
"	"	.9152	
"	"	.9445, 0°	Gartenmeister. A. C. P. 233, 249.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Propyl formate	$C_3H_7, C_2H_5O_2$	.9197, 0°	Pierre and Puchot. Z. C. 12, 660.
" "	"	.877, 38° 5	
" "	"	.836, 72° 5	
" "	"	.9188, 0°	Pierre and Puchot. Ann. (4), 22, 288.
" "	"	.8761, 38° 5	
" "	"	.825, 72° 5	
" "	"	.9026, 14°	De Heen. Bei. 5, 105.
" "	"	.91828, 0°	Elsässer. A. C. P.
" "	"	.82146, 81°	218, 302.
" "	"	.9023, 20°	Winkelmann. P. A.
" "	"	.9125, 20°	(2), 26, 105.
" "	"	.9250, 0°	Gartenmeister. A.C.
" "	"	.8270, 81°	P. 233, 249.
Butyl formate	$C_4H_9, C_2H_5O_2$	.9108, 0°	" "
" "	"	.7972, 106° 9	
Isobutyl formate	"	.8845, 0°	Pierre and Puchot. Ann. (4), 22, 319.
" "	"	.850, 34°	
" "	"	.8221, 50° 8	
" "	"	.7962, 83° 4	
" "	"	.8650, 14°	
" "	"	.7784, 98°	De Heen. Bei. 5, 105.
" "	"		Schiff. G. C. I. 13, 177.
" "	"	.88543, 0°	Elsässer. A. C. P.
" "	"	.78287, 97° 9	218, 302.
Normal amyl formate	$C_5H_{11}, C_2H_5O_2$	.9018, 0°	Gartenmeister. A.C.
" "	"	.7692, 130° 4	P. 233, 249.
Isamyl formate	"	.884, 15°	Delfs. J. 7, 26.
" "	"	.8945, 0°	Kopp. A. C. P. 96.
" "	"	.8743, 21°	
" "	"	.8809, 15°	Mendeleeff. J. 13, 7.
" "	"	.8816, 14°	De Heen. Bei. 5, 105.
" "	"	.7554, 123° 5	Schiff. G. C. I. 13, 177.
" "	"	.8802, 20°	Bühl. Bei. 4, 782.
" "	"	.894378, 0°	Elsässer. A. C. P.
" "	"	.77027, 123° 3	218, 302.
Normal hexyl formate	$C_6H_{13}, C_2H_5O_2$	.8495, 17°	Freitzel. Ber. 16, 745.
" "	"	.8977, 0°	Gartenmeister. A.C.
" "	"	.7481, 153° 6	
Normal heptyl formate	$C_7H_{15}, C_2H_5O_2$	.8937, 0°	" "
" "	"	.7308, 176° 7	
Normal octyl formate	$C_8H_{17}, C_2H_5O_2$	.8929, 0°	" "
" "	"	.7156, 198° 1	
Methyl acetate	$C_2H_5, C_2H_3O_2$	.919, 22°	Dumas and Peligot. P. A. 36, 117.
" "	"	.9328, 0°	Kopp. A. C. P. 96.
" "	"	.9085, 21°	
" "	"	.9562, 0°	Kopp. P. A. 72, 271.
" "	"	.93755, 15° 6	
" "	"	.86684, 0°	Pierre. C. R. 27, 213.
" "	"	.940	Grodzki and Kraemer. Z. A. C. 14, 103.
" "	"	.9039, 20°	Bühl. Ber. 13, 1530.
" "	"	.9319, 14°	De Heen. Bei. 5, 105.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl acetate	$C_2H_5 \cdot C_2H_3O_2$	.8825 } 55° {	Schiff. G. C. I. 13,
"	"	.8826 } 177.	
"	"	.95774, 0°	Elsässer. A. C. P.
"	"	.88086, 57° 5	218, 302.
"	"	.9424, 0°	Winkelmann. P. A.
"	"		(2), 26, 105.
"	"	.9238, 19° 2	Henry. C. R. 101,
"	"		250.
"	"	.9643, 0°	Gartenmeister. Bei.
"	"	.8873, 57° 3	9, 766.
Ethyl acetate	$C_2H_5 \cdot C_2H_3O_2$	.866, 7°	Thénard. Gm. H.
"	"	.89, 15°	Liebig.
"	"	.9051, 0°	Frankenheim. P. A.
"	"		72, 427.
"	"	.91046, 0°	Kopp. P. A. 72, 276.
"	"	.89277, 15° 7	
"	"	.8926, 15° 9	
"	"	.90691, 0°	
"	"		Pierre. C. R. 27,
"	"		213.
"	"	.906, 17° 5	Marsson. J. 4, 514.
"	"	.903, 17°	Becker. J. 5, 563.
"	"	.932, 20°	Goessmann. J. 5,
"	"		563.
"	"	.9055, 17° 5	Marsson. J. 6, 501.
"	"	.8922, 15°	Delfs. J. 7, 26.
"	"	.8981, 15°	Mendelejeff. J. 13, 7.
"	"	.903, 0°	Pierre and Puchot.
"	"		Ann. (4), 22, 261.
"	"	.868, 24°	Léblanc. Ann. (3),
"	"		10, 198.
"	"	.9068, 15°	Linnemann. A. C.
"	"		P. 160, 195.
"	"	.9007, 20°	Brühl. Ber. 13, 1530.
"	"	.9026, 14°	De Heen. Bei. 5, 105.
"	"	.8220, 74° 3	Schiff. Ber. 14, 2766.
"	"	.9227, 0°	Several intermedi- ate values given. Naccari and Pag- liani. Bei. 6, 89.
"	"	.9076, 12° 80	
"	"	.8914, 26° 24	
"	"	.8730, 41° 13	
"	"	.8594, 51° 75	
"	"	.8466, 61° 87	
"	"	.8309, 73° 74	W. I. Clark. Ber.
"	"	.9004	
"	"	.9012	16, 1227.
"	"	.8306 } 75° 5	Schiff. G. C. I. 13,
"	"	.8294 } 177.	
"	"	.92388, 0°	Elsässer. A. C. P.
"	"	.82673, 77° 1	218, 302.
"	"	.9007 } 20°	Winkelmann. P. A.
"	"	.9047 } (2), 26, 105.	
"	"	.9252, 0°	Gartenmeister. Bei.
"	"		9, 766.
Propyl acetate	$C_3H_7 \cdot C_2H_3O_2$	.910, 0°	Pierre and Puchot.
"	"	.8635, 42° 5	
"	"	.8137, 84° 6	
"	"	.910, 0°	Z. C. 12, 660.
"	"	.8627, 42° 5	
"	"	.8128, 84° 6	
"	"		Pierre and Puchot.
"	"		Ann. (4), 22, 289.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Propyl acetate	$C_3H_7 \cdot C_2H_3O_2$	.913, 0°	Rossi. A. C. P. 159, 79.
" "	"	.8992, 15°	Linnemann. A. C. P. 161, 30.
" "	"	.8856, 20°	Brühl. Ber. 13, 1530.
" "	"	.8871, 14°	De Heen. Bel. 5, 105.
" "	"	.7916 ( 101° .8	( Schiff. G. C. I. 13, 177.
" "	"	.7918 ( 177.	
" "	"	.90092, 0°	( Elsässer. A. C. P. 218, 302.
" "	"	.794388, 100° .8	
" "	"	.9063, 0°	Gartenmeister. A. C. P. 233, 249.
Butyl acetate	$C_4H_9 \cdot C_2H_3O_2$	.9000, 0°	Lieben and Rossi. A. C. P. 158, 137.
" "	"	.8817, 20°	
" "	"	.8659, 40°	
" "	"	.8768, 23°	
" "	"	.9016, 0°	Linnemann. Ann. (4), 27, 268.
" "	"	.7683, 124° .5	Gartenmeister. A. C. P. 233, 249.
Isobutyl acetate	"	.8845, 16°	Wurtz. J. 7, 575.
" "	"	.892, 0°	Lieben. J. 21, 443.
" "	"	.89096, 6°	Chapman and Smith. J. C. S. 22, 160.
" "	"	.8747, 16°	
" "	"	.83143, 50°	
" "	"	.9052, 0°	
" "	"	.8668, 37° .1	Pierre and Puchot. Ann. (4), 22, 322.
" "	"	.8328, 68° .9	
" "	"	.8096, 89° .4	
" "	"	.7972, 90° .75	
" "	"	.7589, 112° .7	Schiff. G. C. I. 13, 177.
" "	"	.892100, 0°	( Elsässer. A. C. P. 218, 302.
" "	"	.77080, 116° .3	
Normal amyl acetate	$C_5H_{11} \cdot C_2H_3O_2$	.8963, 0°	Lieben and Rossi. A. C. P. 159, 70.
" "	"	.8792, 20°	
" "	"	.8645, 40°	
" "	"	.8948, 0°	
" "	"	.7461, 147° .6	Gartenmeister. A. C. P. 233, 249.
Methylpropylcarbyl acetate.	"	.9222, 0°	Wurtz. Z. C. 11, 490.
Diethylcarbyl acetate	"	.909, 0°	( Wagner and Saytzeff. A. C. P. 175, 366.
" "	"	.893, 16°	
Amyl acetate	"	.8572, 21°	Kopp. A. C. P. 94, 297.
" "	"	.8765, 0°	
" "	"	.8837, 0°	Kopp. A. C. P. 94, 257.
" "	"	.8692, 15° .1	
" "	"	.863, 10°	Deffs. J. 7, 26.
" "	"	.8762, 15°	Mendelejeff. J. 13, 7.
" "	"	.8733 ( 15°	Schorlemmer. J. 19, 527.
" "	"	.8752 ( 15°	
" "	Inactive	.8848, 0°	Balbiano. Ber. 9, 1437.
" "	"	.8561, 14°	De Heen. Bel. 5, 105.
" "	"	.8561, 20°	Brühl. Ber. 4, 782.
" "	"	.7429 ( 138° .5	( Schiff. G. C. I. 13, 177.
" "	"	.7430 ( 177.	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tertiary amyl acetate ----	$C_5 H_{11} \cdot C_2 H_3 O_2$ ----	.8909, 0° ----	Flawitzky. A. C. P. 179, 349.
“ “ “ ----	“ ----	.8738, 19° ----	
Normal hexyl acetate ----	$C_6 H_{13} \cdot C_2 H_3 O_2$ ----	.8890, 17° ----	Franchimont and Zincke. C. N. 24, 263.
“ “ “ ----	“ ----	.8902, 0° ----	Gartenmeister. A. C. P. 233, 249.
“ “ “ ----	“ ----	.7267, 169° 2' ----	
Secondary hexyl acetate ----	“ ----	.8778, 0° ----	{ Wanklyn and Er- lenmeyer. J. 16, 522.
“ “ “ ----	“ ----	.8310, 50° ----	
Methyldiethylcarbyl ace- tate. “ “	“ ----	.8824, 20° ----	Reformatsky. J. P. C. (2), 36, 340.
“ “ “	“ ----	.8772, 25° ----	
“ “ “	“ ----	.8735, 30° ----	
“ “ “	“ ----	.8679, 35° ----	
Ethylpropylcarbyl ace- tate.	“ ----	.8525, 0° ----	Buff. J. 21, 336.
Methylisobutylcarbylace- tate.	“ ----	.8805, 0° ----	Kuwschinow. Ber. 20, ref. 629.
Methylpropylethol ace- tate.	“ ----	.8717, 25° ----	Lieben and Zeisel. M. C. 4, 33.
Normal heptyl acetate ----	$C_7 H_{15} \cdot C_2 H_3 O_2$ ----	.874, 16° ----	Cross. J. C. S. 32, 123.
“ “ “ ----	“ ----	.8891, 0° ----	Gartenmeister. A. C. P. 233, 249.
“ “ “ ----	“ ----	.7134, 191.°3 ----	
Isoheptyl acetate ----	“ ----	.8605, 16° ----	Three products. Schorlemmer. A. C. P. 136, 271.
“ “ “ ----	“ ----	.8707, 16° 5' ----	
“ “ “ ----	“ ----	.8868, 19° ----	{ Ustinoff and Saytz- eff. J. P. C. (2), 34, 470.
Dipropylcarbyl acetate ----	“ ----	.8742, 0° ----	
“ “ “ ----	“ ----	.8587, 20° ----	
Methylisoamylcarbylace- tate.	“ ----	.8595, 23° ----	Rohn. A. C. P. 190, 312.
Normal octyl acetate ----	$C_8 H_{17} \cdot C_2 H_3 O_2$ ----	.8717, 16° ----	Zincke. J. 22, 370.
“ “ “ ----	“ ----	.8847, 0° ----	Gartenmeister. A. C. P. 233, 249.
“ “ “ ----	“ ----	.6981, 210° ----	
Methyldipropylcarbylace- tate. “ “	“ ----	.8738, 0° ----	{ Gortaloff and Saytzeff. J. P. C. (2), 33, 702.
“ “ “	“ ----	.8554, 20° ----	
“ Octylene acetate “ ----	“ ----	.822, 0° ----	Clermont. J. 17, 517.
“ “ “ ----	“ ----	.803, 26° ----	
Ethyldipropylcarbyl ace- tate. “ “	$C_9 H_{19} \cdot C_2 H_3 O_2$ ----	.8795, 0° ----	{ Tschebotareff and Saytzeff. J. P. C. (2), 33, 193.
“ “ “	“ ----	.8675, 20° ----	
Isomer of myristic acetate	$C_{16} H_{32} O_2$ ----	.8559, 15° ----	Perkin, Jr. J. C. S. 43, 77.
“ “ “	“ ----	.8476, 30° ----	
“ “ “	“ ----	.8448, 35° ----	
Cetyl acetate ----	$C_{16} H_{33} \cdot C_2 H_3 O_2$ ----	.858, 20° ----	Dollfus. J. 17, 518.
Methyl propionate ----	$C H_3 \cdot C_3 H_5 O_2$ ----	.9578, 4° ----	Kahlbaum. Ber. 12, 344.
“ “ “ ----	“ ----	.8954, 14° ----	De Heen. Bei. 5, 105.
“ “ “ ----	“ ----	.8422 ----	{ Schiff. G. C. I. 13, 177.
“ “ “ ----	“ ----	.8423 } 78° 5' ----	
“ “ “ ----	“ ----	.93725, 0° ----	Elsäßer. A. C. P.
“ “ “ ----	“ ----	.836798, 79° 9' ----	218, 302.
“ “ “ ----	“ ----	.922, 15° ----	Israel. A. C. P. 231, 197.
“ “ “ ----	“ ----	.9403, 0° ----	Gartenmeister. Bei. 9, 773.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl propionate	$C_2H_5 \cdot C_3H_5O_2$	.9231, 0°	Kopp. A. C. P. 95, 307.
"	"	.8949, 26° 3	
"	"	.9139, 0°	Pierre and Puchot. Ann. (4), 22, 351.
"	"	.8625, 45° 1	
"	"	.816, 83°	Linnemann. A. C. P. 160, 195.
"	"	.8964, 16°	
"	"	.8945, 17°	De Heen. Bei. 5, 105.
"	"	.9175, 14°	
"	"	.7961	(Schiff. G. C. I. 13, 177.
"	"	.7963	
"	"	.9109, 0°	Several intermediate values given. Naccari and Pagliani. Bei. 6, 89.
"	"	.8968, 12° 60	
"	"	.8832, 24° 57	Elsässer. A. C. P. 218, 302.
"	"	.8637, 41° 54	
"	"	.8514, 52° 05	Weger. Ber. 16, 2912.
"	"	.8365, 64° 46	
"	"	.8247, 74° 46	Three samples. Israel. A. C. P. 231, 197.
"	"	.8020, 92° 06	
"	"	.91238, 0°	Elsässer. A. C. P. 218, 302.
"	"	.79868, 98° 3	
"	"	.91224, 0°	Weger. Ber. 16, 2912.
"	"	.886	
"	"	.8010	Three samples. Israel. A. C. P. 231, 197.
"	"	.8900, 19°	
Propyl propionate	$C_3H_7 \cdot C_3H_5O_2$	.9022, 0°	Pierre and Puchot. Ann. (4), 22, 293.
"	"	.8498, 51° 27	
"	"	.7944, 100° 6	Linnemann. A. C. P. 161, 32.
"	"	.7839, 108° 34	
"	"	.8885, 13°	De Heen. Bei. 5, 105.
"	"	.8821, 14°	
"	"	.7680	Schiff. G. C. I. 13, 177.
"	"	.7683	
"	"	.90192, 0°	Elsässer. A. C. P. 218, 302.
"	"	.772008, 122° 2	
"	"	.9023, 0°	Gartenmeister. A. C. P. 233, 249.
Butyl propionate	$C_4H_9 \cdot C_3H_5O_2$	.8828, 15°	Linnemann. Ann. (4), 27, 268.
"	"	.8953, 0°	Gartenmeister. A. C. P. 233, 249.
"	"	.7489, 145° 4	
Isobutyl propionate	"	.8926, 0°	Pierre and Puchot. Ann. (4), 22, 324.
"	"	.8437, 46° 2	
"	"	.7896, 100° 15	Elsässer. A. C. P. 218, 302.
"	"	.7698, 116° 5	
"	"	.887595, 0°	De Heen. Bei. 5, 105.
"	"	.74424, 136° 8	
Amyl propionate	$C_5H_{11} \cdot C_3H_5O_2$	.8790, 14°	Schiff. G. C. I. 13, 177.
"	"	.7295, 160°	
"	"	.887672, 0°	Elsässer. A. C. P. 218, 302.
"	"	.73646, 160° 2	
Normal heptyl propionate	$C_7H_{15} \cdot C_3H_5O_2$	.8846, 0°	Gartenmeister. A. C. P. 233, 249.
"	"	.6946, 208°	
Normal octyl propionate	$C_8H_{17} \cdot C_3H_5O_2$	.8833, 0°	" "
"	"	.6860, 226° 4	
Methyl butyrate	$C_4H_9 \cdot C_4H_7O_2$	.92068, 0°	Kopp. P. A. 72, 280.
"	"	.9045, 15° 5	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl butyrate-----	$C_4H_8O_2$ -----	1.02928, 0°	Pierre. C. R. 27, 213.
" "-----	"-----	.9091, 0°	Kopp. A. C. P. 95, 307.
" "-----	"-----	.8793, 30°.3	
" "-----	"-----	.9475, 4°	Kahlbaum. Ber. 12, 344.
" "-----	"-----	.8962, 20°	Brühl. Ber. 13. 1530]
" "-----	"-----	.91939, 0°	{ Elsässer. A. C. P. 218, 302.
" "-----	"-----	.80261, 102°.3	
" "-----	"-----	.9194, 0°	Gartenmeister. A. C. P. 233, 249.
Methyl isobutyrate-----	"-----	.9056, 0°	Pierre and Puchot. B. S. C. 19, 72.
" "-----	"-----	.8625, 38°.65	
" "-----	"-----	.815, 78°.6	Elsässer. A. C. P. 218, 302.
" "-----	"-----	.911181, 0°	
" "-----	"-----	.80397, 92°.3	Linnemann. A. C. P. 160, 195.
Ethyl butyrate-----	$C_6H_{12}O_2$ -----	.9003, 18°	Brühl. Ber. 14, 2800.
" "-----	"-----	.8990, 17°	
" "-----	"-----	.8892, 20°	{ Schiff. G. C. I. 13, 177.
" "-----	"-----	.7703	
" "-----	"-----	.7705	Pierre. C. R. 27, 213.
" "-----	"-----	.90193, 0°	
" "-----	"-----	.8894, 15°	Mendelejeff. J. 13, 7.
" "-----	"-----	.8942, 0°	Frankland and Dupa. J. 18, 306.
" "-----	"-----	.89957, 0°	Elsässer. A. C. P. 218, 302.
" "-----	"-----	.76940, 119°.9	
" "-----	"-----	.9004, 0°	Gartenmeister. A. C. P. 233, 249.
Ethyl isobutyrate-----	"-----	.90412, 0°	Kopp. P. A. 72, 287.
" "-----	"-----	.89065, 13°	
" "-----	"-----	.890, 0°	Pierre and Puchot. B. S. C. 19, 72.
" "-----	"-----	.871, 18°.8	
" "-----	"-----	.831, 55°.6	Schiff. G. C. I. 13, 177.
" "-----	"-----	.7794, 100°.1	
" "-----	"-----	.7681, 110°.1	{ Elsässer. A. C. P. 218, 302.
" "-----	"-----	.890367, 0°	
" "-----	"-----	.77725, 110°.1	Linnemann. A. C. P. 161, 33.
Propyl butyrate-----	$C_7H_{14}O_2$ -----	.8789, 15°	Elsässer. A. C. P. 218, 302.
" "-----	"-----	.89299, 0°	
" "-----	"-----	.745694, 142°.7	{ Pierre and Puchot. Ann. (4), 22, 295.
" "-----	"-----	.8872, 0°	
Propyl isobutyrate-----	"-----	.8402, 47°.24	{ Elsässer. A. C. P. 218, 302.
" "-----	"-----	.7842, 100°.25	
" "-----	"-----	.7525, 128°.75	Silva. Z. C. 12, 508.
" "-----	"-----	.884317, 0°	
" "-----	"-----	.74647, 133°.9	{ Lieben and Rossi. A. C. P. 158, 137.
" "-----	"-----	.8787, 0°	
Isopropyl butyrate-----	"-----	.8652, 13°	Linnemann. Ann. (4), 27, 268.
" "-----	"-----	.8885, 0°	
Butyl butyrate-----	$C_8H_{16}O_2$ -----	.8717, 20°	Gartenmeister. A. C. P. 233, 249.
" "-----	"-----	.8579, 40°	
" "-----	"-----	.8760, 12°	{
" "-----	"-----	.8878, 0°	
" "-----	"-----	.7264, 165°.7	

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Isobutyl butyrate	$C_4H_9 \cdot C_4H_7O_2$	.881778, 0°	) Elsässer. A. C. P. 218, 302.
" "	"	.74630, 156° 9	
" "	"	.8798, 0°	) Grunzweig. B. S. C. 18, 125.
" "	"	.86635, 16°	
" "	"	.81838, 98° 4	) Pierre and Puchot. Ann. (4), 22, 326.
Isobutyl isobutyrate	"	.8719, 0°	
" "	"	.8238, 50° 8	) Elsässer. A. C. P. 218, 302.
" "	"	.7753, 99° 8	
" "	"	.7439, 128° 3	) Grunzweig. B. S. C. 18, 125.
" "	"	.874957, 6°	
" "	"	.73281, 146° 6	) Gartenmeister. A. C. P. 233, 249.
" "	"	.87519, 0°	
" "	"	.86064, 15°	) Mendelejeff. J. 13, 7. Dollfus. J. 7, 26.
" "	"	.81192, 98° 4	
Normal amyl butyrate	$C_5H_{11} \cdot C_4H_7O_2$	.8832, 0°	) Elsässer. A. C. P. 218, 302.
" "	"	.7092, 181° 8	
Amyl butyrate	"	.8083, 15°	) DeHeen. Bei. 10, 313.
" "	"	.852, 15°	
" "	"	.882306, 0°	) Pierre and Puchot. Ann. (4), 22, 343.
" "	"	.71118, 178° 6	
" "	"	.879, 10°	) Elsässer. A. C. P. 218, 302.
Amyl isobutyrate	"	.8769, 0°	
" "	"	.8264, 55° 4	) Gartenmeister. A. C. P. 233, 249.
" "	"	.7839, 100° 2	
" "	"	.7449, 139° 5	) Dollfus. J. 17, 518. Cahours and Demar- guy. C. R. 89, 331.
" "	"	.875965, 0°	
Normal hexyl butyrate	$C_6H_{13} \cdot C_4H_7O_2$	.70662, 168° 8	) Kopp. A. C. P. 96.
" "	"	.6963, 205° 1	
Normal heptyl butyrate	$C_7H_{15} \cdot C_4H_7O_2$	.8827, 0°	) Kopp. P. A. 72, 291.
" "	"	.6869, 225° 2	
Normal octyl butyrate	$C_8H_{17} \cdot C_4H_7O_2$	.8794, 0°	) Pierre and Puchot. Ann. (4), 22, 349.
" "	"	.6751, 242° 2	
Cetyl butyrate	$C_{16}H_{33} \cdot C_4H_7O_2$	.856, 20°	) Renard. Ann. (6), 1, 225.
Methyl valerate	$C_4H_9 \cdot C_5H_9O_2$	.895, 17°	
" "	"	.9097, 0°	) Schmidt and Sach- leben. J. C. S. 36, 139.
" "	"	.7767, 127° 3	
Methyl isovalerate	"	.8930, 0°	) Bruhl. Bei. 4, 782.
" "	"	.8806, 16°	
" "	"	.901525, 0°	) Elsässer. A. C. P. 218, 302.
" "	"	.88687, 15°	
" "	"	.88662, 152° 3	) Lieben and Rossi. A. C. P. 165, 169.
" "	"	.9005, 0°	
" "	"	.8581, 41° 5	) Lieben and Rossi. A. C. P. 165, 169.
" "	"	.8413, 61° 3	
" "	"	.7945, 100° 1	) Lieben and Rossi. A. C. P. 165, 169.
" "	"	.8908, 16°	
" "	"	.885465, 17°	) Lieben and Rossi. A. C. P. 165, 169.
" "	"	.8795, 20°	
" "	"	.90035, 0°	) Lieben and Rossi. A. C. P. 165, 169.
" "	"	.77518, 116° 7	
Ethyl valerate	$C_4H_9 \cdot C_5H_9O_2$	.894, 0°	) Lieben and Rossi. A. C. P. 165, 169.
" "	"	.8765, 20°	
" "	"	.8616, 40°	) Lieben and Rossi. A. C. P. 165, 169.
" "	"	.8616, 40°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl valerate-----	$C_2H_5.C_5H_9O_2$ -----	.878, 18°.5----	Cahours and Demarçay. C. R. 89, 331.
“ “-----	“-----	.8939, 0°-----	Gartenmeister. Bei. 9, 766.
“ “-----	“-----	.7443, 144°.7-----	
Ethyl isovalerate-----	“-----	.894, 13°-----	Otto. A. C. P. 25, 62.
“ “-----	“-----	.869, 14°-----	Berthelot. J. 7, 441.
“ “-----	“-----	.8829, 0°-----	Kopp. A. C. P. 96.
“ “-----	“-----	.8659, 18°-----	
“ “-----	“-----	.886, 0°-----	Pierre and Puchot. Ann. (4), 22, 353.
“ “-----	“-----	.832, 55°.7-----	
“ “-----	“-----	.7843, 99°.63-----	Brühl. Bei. 4, 782.
“ “-----	“-----	.7582, 122°.5-----	
“ “-----	“-----	.8661, 20°-----	Elsässer. A. C. P. 218, 302.
“ “-----	“-----	.88514, 0°-----	
“ “-----	“-----	.74764, 134°.3-----	Renard. Ann. (6), 1, 223.
“ “-----	“-----	.8743, 16°-----	
“ “-----	“-----	.8882, 0°-----	Frankland and Dupa. J. 20, 396.
“ “-----	“-----	.87166, 18°-----	
Ethyl trimethylacetate-----	“-----	.8773, 0°-----	Friedeland Silva. J. C. S. (2), 11, 1127.
“ “-----	“-----	.8535, 25°-----	
“ “-----	“-----	.875, 0°-----	Butlerow. B. S. C. 23, 27.
Ethyl methylethylacetate-----	“-----	.877, 15°-----	Israel. A. C. P. 231, 197.
Propyl valerate-----	$C_3H_7.C_5H_9O_2$ -----	.8888, 0°-----	Gartenmeister. Bei. 9, 766.
“ “-----	“-----	.7264, 167°.5-----	
Propyl isovalerate-----	“-----	.8862, 0°-----	Pierre and Puchot. Ann. (4), 22, 297.
“ “-----	“-----	.8387, 50°.8-----	
“ “-----	“-----	.7906, 100°.15-----	Elsässer. A. C. P. 218, 302.
“ “-----	“-----	.7755, 113°.7-----	
“ “-----	“-----	.880915, 0°-----	Silva. Z. C. 12, 508.
“ “-----	“-----	.727405, 155°.9-----	
Isopropyl isovalerate-----	“-----	.8702, 0°-----	Gartenmeister. Bei. 9, 766.
“ “-----	“-----	.8538, 17°-----	
Butyl valerate-----	$C_4H_9.C_5H_9O_2$ -----	.8847, 0°-----	Pierre and Puchot. Ann. (4), 22, 330.
“ “-----	“-----	.7095, 185°.8-----	
Isobutyl isovalerate-----	“-----	.8884, 0°-----	Elsässer. A. C. P. 218, 302.
“ “-----	“-----	.8438, 49°.7-----	
“ “-----	“-----	.7966, 100°-----	Gartenmeister. Bei. 9, 766.
“ “-----	“-----	.7428, 155°.8-----	
“ “-----	“-----	.873599, 0°-----	Kopp. A. C. P. 94, 257.
“ “-----	“-----	.70549, 168°.7-----	
Normal amyl valerate-----	$C_5H_{11}.C_5H_9O_2$ -----	.8812, 0°-----	Mendelejeff. J. 13, 7.
“ “-----	“-----	.6982, 203°.7-----	
“ “-----	“-----	.8793, 0°-----	Pierre and Puchot. Ann. (4), 22, 346.
“ “-----	“-----	.8645, 17°.7-----	
“ “-----	“-----	.8596, 15°-----	Balbiano. Ber. 9, 1437.
“ “-----	“-----	.874, 0°-----	
“ “-----	“-----	.832, 50°.67-----	Renard. Ann. (6), 1, 223.
“ “-----	“-----	.787, 100°-----	
“ “-----	“-----	.740, 149°.5-----	Ley. Ber. 6, 1362.
“ “-----	“-----	.8700, 0°-----	
“ “-----	“-----	.8633, 16°-----	
“ “-----	“-----	.869, 15°-----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Amyl isovalerate -----	$C_5H_{11}, C_5H_9O_2$ -----	.8658, 20° -----	Bruhl. Bei. 4, 782.
" " -----	" -----	.863, 10° -----	De Heen. Bei. 11, 313.
Normal hexyl valerate -----	$C_6H_{13}, C_5H_9O_2$ -----	.8797, 0° -----	Gartenmeister. Bei. 9, 766.
" " -----	" -----	.6829, 229°.8 -----	
Normal heptyl valerate -----	$C_7H_{15}, C_5H_9O_2$ -----	.8786, 0° -----	" "
" " -----	" -----	.6708, 243°.6 -----	
Normal octyl valerate -----	$C_8H_{17}, C_5H_9O_2$ -----	.8784, 0° -----	" "
" " -----	" -----	.6618, 260°.2 -----	
Octyl isovalerate -----	" -----	.8624, 16° -----	Zincke. J. 22, 371.
Cetyl isovalerate -----	$C_{16}H_{33}, C_5H_9O_2$ -----	.852, 20° -----	Dollfus. J. 17, 518.
Methyl caprate -----	$C_2H_5, C_6H_{11}O_2$ -----	.8977, 18° -----	Fehling. A. C. P. 53, 399.
" " -----	" -----	.889, 19° -----	Cahours and Demarçay. C. R. 89, 331.
" " -----	" -----	.9039, 0° -----	Gartenmeister. Bei. 9, 766.
" " -----	" -----	.7536, 149°.6 -----	
Ethyl caprate -----	$C_2H_5, C_6H_{11}O_2$ -----	.882, 18° -----	Lerch. A. C. P. 49, 212.
" " -----	" -----	.8765, 17°.5 -----	Franchimont and Zincke. A. C. P. 163, 193.
" " -----	" -----	.8898, 0° -----	Lieben and Rossi. A. C. P. 165, 118.
" " -----	" -----	.8732, 20° -----	
" " -----	" -----	.8594, 40° -----	
" " -----	" -----	.8898, 0° -----	Lieben. A. C. P. 170, 89.
" " -----	" -----	.8728, 20° -----	
" " -----	" -----	.8596, 40° -----	
" " -----	" -----	.878, 19° -----	Cahours and Demarçay. C. R. 89, 331.
" " -----	" -----	.8888, 0° -----	Gartenmeister. Bei. 9, 766.
" " -----	" -----	.7269, 166°.6 -----	
Ethyl isocaproate -----	" -----	.887, 0° -----	Lieben and Rossi. A. C. P. 165, 118.
" " -----	" -----	.8705, 20° -----	
" " -----	" -----	.8566, 40° -----	
Ethyl diethylacetate -----	" -----	.8822, 0° -----	Frankland and Duppa. J. 18, 308.
" " -----	" -----	.8826, 0° -----	Saytzeff. Ber. 11, 512.
" " -----	" -----	.8686, 18° -----	
Ethylmethylpropylacetate -----	" -----	.8816, 0° -----	" "
" " -----	" -----	.8670, 18° -----	
" " -----	" -----	.8841, 0° -----	
" " -----	" -----	.8841, 0° -----	Lieben and Zeisel. M. C. 4, 26.
Propyl caprate -----	$C_3H_7, C_6H_{11}O_2$ -----	.8814, 0° -----	Gartenmeister. Bei. 9, 766.
" " -----	" -----	.7097, 185°.5 -----	
Butyl caprate -----	$C_4H_9, C_6H_{11}O_2$ -----	.8824, 0° -----	
" " -----	" -----	.6978, 201°.3 -----	Franchimont and Zincke. C. N. 24, 263.
Hexyl caprate -----	$C_6H_{11}, C_6H_{11}O_2$ -----	.865 -----	
Methylethylpropyl methyl ethylpropionate.	" -----	.867, 15° -----	Ramburgh. J. C. S. 52, 228.
Normal heptyl caprate -----	$C_7H_{15}, C_6H_{11}O_2$ -----	.8769, 0° -----	Gartenmeister. Bei. 9, 766.
" " -----	" -----	.6594, 259°.4 -----	
Normal octyl caprate -----	$C_8H_{17}, C_6H_{11}O_2$ -----	.8748, 0° -----	" "
" " -----	" -----	.6509, 275°.2 -----	
Methylcannanthate -----	$C_2H_5, C_7H_{13}O_2$ -----	.889, 19° -----	Cahours and Demarçay. C. R. 89, 331.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl oenanthane-----	$C_7H_{13}O_2$ -----	.8981, 0° ----	Gartenmeister. Bei.
“ “-----	“-----	.7325, 172°.1 }-----	9, 766.
Methyl isoënanthane-----	“-----	.8840, 15° ----	Poetsch. A. C. P.
“ “-----	“-----	.8790, 15° ----	218, 56.
“ “-----	“-----	.8790, 15° ----	Hecht. A. C. P.
Ethyl oenanthane-----	$C_9H_{17}O_2$ -----	.874, 24° ----	209, 324.
“ “-----	“-----	.8735, 16° ----	Franchimont. A. C.
“ “-----	“-----	.871, 21° ----	P. 165, 237.
“ “-----	“-----	.877, 16°.5-----	Grimshaw and
“ “-----	“-----	.8879, 0° ----	Schorlemmer. A.
“ “-----	“-----	.8716, 20° ----	C. P. 170, 137.
“ “-----	“-----	.8589, 40° ----	Mehlis. A. C. P.
“ “-----	“-----	.87163-----	185, 366.
“ “-----	“-----	.87199-----	Cahours and Demar-
“ “-----	“-----	.86477-----	çay. C. R. 89, 331.
“ “-----	“-----	.86487-----	“-----
“ “-----	“-----	.8861, 0° ----	} Lieben and Janecsek.
“ “-----	“-----	.7105, 187°.1-----	J. R. C. 5, 156.
“ “-----	“-----	.8720, 15° ----	“-----
Ethyl isoënanthane-----	“-----	.8685, 15° ----	} Perkin. J. P. C.
“ “-----	“-----	.8570, 27° ----	(2), 32, 523.
“ “-----	“-----	.8824, 0° ----	} Gartenmeister. Bei.
Propyl oenanthane-----	$C_{10}H_{19}O_2$ -----	.6965, 206°.4-----	9, 766.
“ “-----	“-----	.8635, 19° ----	Hecht. A. C. P. 209,
Propyl isoënanthane-----	“-----	.859, 19° ----	324.
Isopropyl isoënanthane--	“-----	.8807, 0° ----	Hecht. A. C. P. 209,
Butyl oenanthane-----	$C_{11}H_{21}O_2$ -----	.6839, 225°.1-----	325.
“ “-----	“-----	.870, 16° ----	Gartenmeister. Bei.
Normal heptyl oenanthane	$C_{13}H_{25}O_2$ -----	.86522, 15° }-----	9, 766.
“ “-----	“-----	.85933, 25° }-----	Cross. J. C. S. 32,
“ “-----	“-----	.8807, 0° ----	123.
“ “-----	“-----	.6839, 225°.1-----	Perkin. J. P. C.
“ “-----	“-----	.8757, 0° ----	(2), 32, 523.
Normal octyl oenanthane	$C_{15}H_{31}O_2$ -----	.6419, 290°.4-----	Gartenmeister. Bei.
“ “-----	“-----	.882-----	9, 766.
Methyl caprylate-----	$C_{11}H_{23}O_2$ -----	.887, 18° ----	“ “
“ “-----	“-----	.8942, 0° ----	Fehling. A. C. P.
“ “-----	“-----	.7163, 192°.9-----	53, 399.
“ “-----	“-----	.8738, 15° ----	Cahours and Demar-
Ethyl caprylate-----	$C_{13}H_{27}O_2$ -----	.8728, 16° ----	çay. C. R. 89, 331.
“ “-----	“-----	.878, 17° ----	Gartenmeister. Bei.
“ “-----	“-----	.8842, 0° ----	9, 776.
“ “-----	“-----	.6980, 205°.8-----	Fehling. A. C. P. 53,
“ “-----	“-----	“-----	399.
“ “-----	“-----	“-----	Zineke. J. 22, 373.
“ “-----	“-----	“-----	Cahours and Demar-
“ “-----	“-----	“-----	çay. C. R. 89, 331.
“ “-----	“-----	“-----	Gartenmeister. Bei.
“ “-----	“-----	“-----	9, 766.

NAME.	FORMULA	SP. GRAVITY.	AUTHORITY
Propyl caprylate	$C_3H_7, C_8H_{15}O_2$	.8805, 0°	Gartenmeister, <i>Bei.</i>
Butyl caprylate	$C_4H_9, C_8H_{15}O_2$	.8867, 22.4°	9, 766.
Normal heptyl caprylate	$C_7H_{15}, C_8H_{15}O_2$	.8797, 0°	" "
Normal octyl caprylate	$C_8H_{17}, C_8H_{15}O_2$	.8715, 2402.5	" "
Methyl pelargonate	$C_2H_5, C_9H_{17}O_2$	.8754, 0°	" "
Ethyl pelargonate	$C_2H_5, C_9H_{17}O_2$	.8605, 289.8	" "
Ethyl pelargonate	$C_2H_5, C_9H_{17}O_2$	.8625, 16°	Zincke, <i>J.</i> 22, 371.
" "	"	.8755, 0°	Gartenmeister, <i>Bei.</i>
" "	"	.8618, 3052.9	9, 766.
" "	"	.8765, 172.5	Zincke and Franchi-
" "	"		mont, <i>A.C.P.</i> 164,
" "	"		333.
" "	"	.8615, 15.5	Cahours, <i>J.</i> 3, 401.
" "	"	.8655, 172.5	Delfs, <i>J.</i> 7, 26.
" "	"		Zincke and Franchi-
" "	"		mont, <i>A.C.P.</i> 164,
" "	"		333.
" "	"	.83307	
" "	"	.86231	With acid from six
" "	"	.86503	sources, Berg-
" "	"	.86402	mann, <i>Arch.</i>
" "	"	.86376	<i>Pharm.</i> 22, 331.
" "	"	.86209	
" "	"	.87033, 152°	Perkin, <i>J. P. C.</i>
" "	"	.86407, 25°	(26, 32, 523).
Ethyl isononylate	"	.86406, 17°	Kullhem, <i>A.C.P.</i>
Ethyl rulylate	$C_2H_5, C_{10}H_{19}O_2$	.862	179, 319.
Ethyl laurate	$C_2H_5, C_{12}H_{23}O_2$	.862, 20	Rowney, <i>J.</i> 4, 443.
" "	"	.8671, 19°	Gorgey, <i>J.</i> 1, 561.
Ethyl myristate	$C_2H_5, C_{14}H_{27}O_2$	.861	Delfs, <i>J.</i> 7, 26.
			Playfair, <i>A.C.P.</i> 37,
			153.

## 6th. Aldehydes of the Acetic Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY
Acetic aldehyde, B. 2048	$C_2H_4O$	.7900, 18°	Löbzig, <i>A.C.P.</i> 14,
" "	"	.79442, 5.4	132.
" "	"	.79388, 5.5	Kopp, <i>P. A.</i> 72,
" "	"	.80092, 0	235.
" "	"	.80551, 0°	Pierre, <i>C. R.</i> 27,
" "	"	.796, 15°	213.
" "	"	.8217, 5 — 10°	Guckelberger, <i>J.</i> 1
" "	"	.8173, 10 — 15	848.
" "	"	.8150, 15 — 20	Regnault, <i>P. A.</i>
" "	"	.7771, 21°	(62, 50).
" "	"	.807, 0°	Ramsey, <i>J. C. S.</i>
" "	"	.7932, 10	35, 463.
" "	"	.7799, 20°	Wurtz,
" "	"		Landolt
" "	"		Brohl, <i>Bei.</i> 4, 782.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acetic aldehyde -----	$C_2 H_4 O$ -----	.79509, 10°	Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	.79138, 13°	
" " -----	" -----	.78761, 16°	
" " -----	" -----	.81312, —5°	
" " -----	" -----	.80561, 0°	Perkin. J. C. S. 51, 808.
" " -----	" -----	.80058, 4°	
" " -----	" -----	.79520, 8°	
" " -----	" -----	.78826, 13°	
Paraldehyde. B. 124° -----	$(C_2 H_4 O)_3$ -----	.998, 15°	Kekulé and Zincke. Z. C. 13, 560.
" -----	" -----	.9943	Two lots. Brühl. A. C. P. 203, 1.
" -----	" -----	.9971	
" -----	" -----	.8737	{ Schiff. G. C. I. 13, 177.
" -----	" -----	.8739	
" -----	" -----	.9909, 19°	Gladstone. Bei. 9, 249.
" -----	" -----	.9982	Louguinine. Ber. 19, ref. 2.
" -----	" -----	.99925, 15°	Perkin. J. P. C. (2), 32, 523.
" -----	" -----	.99003, 25°	
Isomerofaldehyde. B. 110°	$(C_2 H_4 O)_n$	1.033, 0°	Bauer. J. 13, 436.
Propionic aldehyde. B. 49° 5.	$C_3 H_6 O$	.790, 15°	Guckelberger. J. 1, 848.
" " -----	" -----	.8284, 0°	Michaelson. J. 17, 336.
" " -----	" -----	.804, 17°	Rossi. A. C. P. 159, 79.
" " -----	" -----	.832, 0°	Pierre and Puchot. Ann. (4), 22, 298. Linnemann. A. C. P. 161, 23.
" " -----	" -----	.8192, 9° 7	
" " -----	" -----	.7898, 32° 6	
" " -----	" -----	.8074, 21°	
" " -----	" -----	.8066, 20°	Brühl. Ber. 13, 1527.
" " -----	" -----	.80648, 15°	Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	.79664, 25°	
Butyric aldehyde. B. 75°	$C_4 H_8 O$	.821, 22°	Chancel. C. R. 19, 1440.
" " -----	" -----	.8341, 0°	Michaelson. J. 17, 336.
" " -----	" -----	.8170, 20°	Brühl. A. C. P. 203, 1.
" " -----	" -----	.80, 15°	Guckelberger. J. 1, 849.
Isobutyric aldehyde. B. 63°	"	.8226, 0°	Pierre and Puchot. Z. C. 13, 255.
" " -----	" -----	.7919, 27° 75	
" " -----	" -----	.7638, 50° 4	
" " -----	" -----	.7950, 20°	Urech. Ber. 12, 1744.
" " -----	" -----	.803, 20°	Linnemann. Ann. (4), 27, 268.
" " -----	" -----	.7938, 20°	Brühl. A. C. P. 203, 1.
" " -----	" -----	.8057, 0°	Fossek. M. C. 4, 662.
" " -----	" -----	.7898, 20°	
" " -----	" -----	.79722, 15°	Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	.78787, 26°	
Polymer of isobutyric aldehyde.	$(C_4 H_8 O)_n$	.969, 24°	Urech. Ber. 12, 1744.
Isovaleric aldehyde. B. 92° 5.	$C_5 H_{10} O$	.818	Trautwein.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isovaleric aldehyde	$C_5H_{10}O$	.820, 22°	Chance. J. P. C. 36, 447.
"	"	.8009, 20°	Personne. J. 7, 654.
"	"	.8224, 0°	Kopp. A. C. P. 94,
"	"	.8057, 17°.4	257.
"	"	.8209, 0°	Pierre and Puchot. Ann. (4), 22, 340.
"	"	.778, 43°.4	
"	"	.7485, 71°.9	
"	"	.768, 12°.5	A. Schroder. Z. C.
"	"		14, 510.
"	"	.7984, 20°	Bruhl. Bei. 4, 782.
"	"	.8061, 25°	Gladstone. Bei. 9,
"	"		249.
"	"	.7998, 20°	Landolt. P. A. 122,
"	"		556.
"	"	.80405, 15°	Perkin. J. P. C.
"	"	.79607, 25°	
Polymer of valeral. B. 215°	$(C_5H_{10}O)_n$	.90	(2), 32, 523.
Isomer of capraldehyde. B. 180°—185°.	$C_6H_{12}O$	.842, 15°	Wanklyn. J. 22, 530.
Oenanthaldehyde, or oentanthal. B. 154°.	$C_7H_{14}O$	.8271, 7°	Fittig. J. 13, 319.
"	"	.827, 17°	Bussy. J. P. C. 37,
"	"		92.
"	"	.827, 17°	Williamson. J. 1,
"	"		565.
"	"	.823, 16°	Cross. J. C. S. 32,
"	"		123.
"	"	.8495, 20°	Bruhl. A. C. P.
"	"		203, 1.
"	"	.8231, 15°	Perkin, Jr. Ber. 15,
"	"	.8128, 30°	
"	"	.8099, 35°	
"	"	.82264, 15°	2802.
"	"	.81578, 25°	Perkin. J. P. C.
"	"		(2), 32, 523.
Isomer of oentanthal. B. 161°—164°.	"	.835, 14°	Fittig. J. 13, 319.
Caprylic aldehyde. B. 178°	$C_8H_{16}O$	.818, 19°	Bouis. J. 8, 524.
"	"	.820	Limpricht. A. C. P.
"	"		93, 242.
Euodyl aldehyde. B. 213	$C_{11}H_{22}O$	.8497, 15°	Williams. J. 11, 443.
Isomer of myristic aldehyde.	$C_{14}H_{28}O$	.8274, 30°	Perkin, Jr. J. C. S.
"	"	.8258, 35°	
Derivative of the foregoing compound.	$C_{21}H_{40}O$	.8744, 15°	43, 71.
"	"	.8665, 30°	Perkin, Jr. J. C. S.
"	"	.8637, 35°	
"	"		43, 72.

## 7th. Ketones of the Paraffin Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dimethyl ketone, or acetone. B. 56°.5.	$C_2H_5 \cdot CO \cdot C_2H_5$ ----	.7921, 18° ----	Liebig. Gm. H.
" " " ----	" ----	.8144, 0° ----	Kopp. P. A. 72, 239.
" " " ----	" ----	.79945, 13°.9	
" " " ----	" ----	.790, 15° ----	Linnemann. A. C. P. 143, 349.
" " " ----	" ----	.8008, 15° ----	Mendelejeff. J. 13, 7.
" " " ----	" ----	.7938, 18° ----	Linnemann. A. C. P. 161, 18.
" " " ----	" ----	.7975, 15° ----	
" " " ----	" ----	.7998, 15° ----	Grodzki and Krämer. Z. A. C. 14, 103.
" " " ----	" ----	.81858, 0° ----	Thorpe. J. C. S. 37, 371.
" " " ----	" ----	.75369, 56°.53	
" " " ----	" ----	.7920, 20° ----	Brühl. Ber. 13, 1527.
" " " ----	" ----	.8125, 0° ----	Zander. A. C. P. 214, 181.
" " " ----	" ----	.7489, 56°.3	
" " " ----	" ----	.7506, 56° ----	Schiff. G. C. I. 13, 177.
" " " ----	" ----	.79652, 15° ----	Perkin. J. P. C. (2), 32, 523.
" " " ----	" ----	.78669, 25° ----	
Methyl ethyl ketone, or methyl acetone. B. 78°.	$C_2H_5 \cdot CO \cdot C_2H_5$ ----	.838, 19° ----	Fittig. J. 12, 341.
" " " ----	" ----	.8125, 13° ----	Frankland and Duppa. J. 18, 309.
" " " ----	" ----	.824, 0° ----	Popoff. J. 20, 399.
" " " ----	" ----	.8063, 15°.3	Grimm. Z. C. 14, 174.
" " " ----	" ----	.8045, 19°.8	Schramm. Ber. 16, 1581.
Diethyl ketone, or propione. B. 104°.	$C_2H_5 \cdot CO \cdot C_2H_5$ ----	.811, 11°.5----	Genther. J. 20, 455.
" " " ----	" ----	.8145, 0° ----	Chapman and Smith. J. 20, 453.
" " " ----	" ----	.8015, 15° ----	
" " " ----	" ----	.813, 20° ----	Smith. B. S. C. 18, 321.
" " " ----	" ----	.829, 0° ----	{ Wagner and Saytzeff. A. C. P. 179, 323.
" " " ----	" ----	.811, 19° ----	
" " " ----	" ----	.8335, 0° ----	Chancel. C. R. 99, 1055.
Methyl propyl ketone. B. 103°.	$C_3H_7 \cdot CO \cdot C_2H_5$ ----	.8078, 18°.5----	Grimm. Z. C. 14, 174.
" " " ----	" ----	.827, 0° ----	Friedel. J. 11, 295.
" " " ----	" ----	.842, 19° ----	Fittig. J. 12, 341.
" " " ----	" ----	.8132, 13° ----	Frankland and Duppa. J. 18, 307.
" " " ----	" ----	.8040, 22° ----	
" " " ----	" ----	.815, 17°.5----	Popoff. A. C. P. 161, 285.
" " " ----	" ----	.828, 0° ----	{ Wagner and Saytzeff. A. C. P. 179, 323.
" " " ----	" ----	.810, 19° ----	
" " " ----	" ----	.8264, 0° ----	Chancel. C. R. 99, 1055.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl propyl ketone. . . . .	$C_2H_5 \cdot C \cdot O \cdot C_3H_7$	.81238 } 15°	Perkin, J. P. C. (2), 32, 543.
" " " " . . . . .	"	.81233 } 15°	
" " " " . . . . .	"	.80447 } 25°	
" " " " . . . . .	"	.80423 } 25°	
Methyl isopropyl ketone. . . . .	"	.8099, 13°	Frankland and Duppa, J. 18, 309.
" " " " B. 95°.	"	.815, 15°	Munch, A. C. P. 180, 337.
" " " " . . . . .	"	.822, 0°	Wischegradsky, A. C. P. 190, 341.
" " " " . . . . .	"	.804, 19°	Wingradow, A. C. P. 191, 125.
" " " " . . . . .	"	.8125, 0°	
" " " " . . . . .	"	.8051, 19°	
Ketone from amylene bromide. B. 76°—81°.	$C_5H_{10}O$	.832, 0°	Bauchardat, Ber. 14, 2251.
Ethyl propyl ketone. . . . .	$C_2H_5 \cdot C \cdot O \cdot C_3H_7$	.818, 17°.	Popoff, A. C. P. 161, 285.
" " " " B. 123°.	"	.833, 21°.	Oechsner de Coninck, C. R. 82, 93.
Methyl butyl ketone. . . . .	$C_2H_5 \cdot C \cdot O \cdot C_4H_9$	.8298, 0°	Wanklyn and Erlendmeyer, J. 16, 522.
" " " " B. 128°.	"	.846, 50°	Friedel, J. 11, 295.
" " " " . . . . .	"	.833, 0°	Frankland and Duppa, J. 20, 395.
Methyl isobutyl ketone. . . . .	"	.81892, 0°	G. Wagner, Ber. 18, ref. 180.
Methyl secondary butyl ketone. B. 118°.	"	.811, 0°	Wislicenus, A. C. P. 219, 308.
" " " " . . . . .	"	.8181, 11°.	
Methyl tertiary butyl ketone, or pinacol. B. 106°.	$C_2H_5 \cdot C \cdot O \cdot C(CH_3)_3$	.7999, 16°	Fittig, J. 12, 347.
" " " " . . . . .	"	.830, 0°	Two preparations. Butlerow, A. C. P. 174, 127.
" " " " . . . . .	"	.791, 50°	
" " " " . . . . .	"	.823, 0°	
" " " " . . . . .	"	.787, 50°	
" " " " . . . . .	"	.7217, 105°	Schiff, Ber. 9, 559.
Ketone from hexylene. . . . .	$C_6H_{12}O$	.8443, 11°	L. Henry, C. R. 97, 260.
Dipropyl ketone, or butyryl. B. 125°.	$C_3H_7 \cdot C \cdot O \cdot C_3H_7$	.830	Chancel, Ann. (3), 12, 146.
" " " " B. 144°.	"	.819, 20°	E. Schmidt, Ber. 5, 597.
" " " " . . . . .	"	.82, 20°	Kurtz, A. C. P. 161, 207.
" " " " . . . . .	"	.83048, 4°	Perkin, J. C. S. 49, 323.
" " " " . . . . .	"	.82165, 15°	
" " " " . . . . .	"	.81152, 25°	
" " " " . . . . .	"	.8254, 17°	
Diisopropyl ketone. . . . .	"	.8254, 17°	Munch, A. C. P. 180, 331.
Methyl amyl ketone. . . . .	$C_2H_5 \cdot C \cdot O \cdot C_5H_{11}$	.813, 20°	E. Schmidt, Ber. 5, 597.
" " " " B. 155—156°.	"	.808, 12°	Gauthier, J. P. C. (2), 6, 160.
" " " " B. 182°.	"	.828	Popoff, J. 18, 314.
" " " " B. 144	"	.829	
" " " " . . . . .	"	.8747, 17°	
" " " " . . . . .	"	.8175, 17°.	
" " " " . . . . .	"	.8175, 17°.	Rehn, A. C. P. 190,

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methylisopropyl acetone	$C_4H_{10}O$	.815, 20°	Romburgh. J. C. S. 52, 232.
Methyldiethylcarbyl ketone, or diethyl acetone. B. 138°.	"	.8171, 22°	Frankland and Duppa. J. 18, 306.
Methyl amyl pinacolin.	"	.842, 0°	Wischnegradsky. A. C. P. 178, 103.
" " " B. 132°	"	.825, 21°	
Ethyl butyl pinacolin.	$C_8H_{18}O$	.831, 0°	" "
" " " B. 126°	"	.810, 21°	
Methyl hexyl ketone.	$C_8H_{18}O$	.817, 23°	Städeler. J. 10, 361.
" " " B. 171°	"	.8185, 20°	Brühl. A. C. P. 203, 1.
" " " "	"	.6843	{ Schiff. G. C. 1. 13, 177.
" " " "	"	.6844	
" " " B. 209°	"	.8430, 15°	Poetsch. A. C. P. 218, 56.
" " " "	"	.8351, 0°	Béhal. B. S. C. 47, 34.
Methyl butyrene. B. 180°	$C_8H_{16}O$	.827, 16°	Limpriht. J. 11, 296.
Isopropyl isobutyl ketone. B. 160°.	$C_7H_{14}O$	.865, 14°	Williams. C. N. 39, 41.
Ethyl amyl pinacolin.	$C_8H_{18}O$	.845, 0°	Wischnegradsky. A. C. P. 178, 103.
" " " B. 151°	"	.829, 21°	
Diisobutyl ketone, or valeron. B. 181°.	$C_6H_{12}O$	.833, 20°	E. Schmidt. Ber. 5, 597.
Methyl octyl ketone.	$C_9H_{18}O$	.8294, 17°	Jourdan. Ber. 13, 434.
" " " B. 211°.	"	.8379, 3°	Krafft. Ber. 15, 1687.
" " " "	"	.8247, 20°	
Diamyl ketone, or caprone. B. 220°.	$C_9H_{18}O$	.822, 20°	E. Schmidt. Ber. 5, 597.
" " " "	"	.828, 20°	Limpriht. J. 11, 296.
Methyl nonyl ketone, or methyl caprinol. B. 224°.	{ $C_9H_{18}O$ " $C_9H_{19}O$ "	.8295, 17°	{ Goup-Besanez and Grimm. Z. C. 13, 290.
" " " "		.8281, 18°	
" " " "		.8268, 20°	Giesecke. Z. C. 13, 428.
Diethyl ketone, or oenanthone. B. 264°.	$C_6H_{12}O$	.825, 30°	v. Uslar and Seekamp. J. 11, 299.
" " " ?	"	.8870, 15°	Poetsch. A. C. P. 218, 56.
Methyl diheptylcarbyl ketone. B. 302°.	$C_{13}H_{28}O$	.826, 17°	Jourdan. Ber. 13, 434.
Laurone. M. 69°	$C_{11}H_{22}O$	.8036, 69°	Krafft. Ber. 15, 1711.
" " "	"	.8024, 70°	
" " "	"	.7888, 90°	
Myristone. M. 76°	$C_{13}H_{26}O$	.8013, 76°	" "
" " "	"	.7986, 80°	
" " "	"	.7922, 90°	
Palmitone. M. 82°	$C_{15}H_{30}O$	.7997, 82°	" "
" " "	"	.7947, 90°	
" " "	"	.7979, 88°	
Stearone. M. 88°	$C_{17}H_{34}O$	.7932, 95°	" "

## 8th. Oxides, Alcohols, and Ethers of the Olefines.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Ethylene oxide.-----	$C_2H_4O$ -----	.8945, 0°-----	Wurtz. J. 16, 486.
Propylene oxide.-----	$C_3H_6O$ -----	.859, 0°-----	Oser. J. 13, 448.
Butylene oxide.-----	$C_4H_8O$ -----	.8314, 0°-----	Eltekow. J. C. S.
B. 56° .5.		44, 566.	
Isobutylene oxide.-----	"-----	.8311, 0°-----	Eltekow. Ber. 16,
B. 51° .5.		397.	
Amylene oxide. B. 95°-----	$C_5H_{10}O$ -----	.824, 0°-----	Bauer. J. 13, 451.
Trimethylethylene oxide.-----	"-----	.8293, 0°-----	Eltekow. Ber. 16,
B. 75° .5.		397.	
Methylpropylethyleneox- ide. B. 110°-----	$C_6H_{12}O$ -----	.8236, 13° .8-----	L. Henry. Ann. (5),
δ. Hexylene oxide.-----	"-----	.8739, 0°-----	29, 553.
B. 103°—104°.			Lipp. Ber. 18, 3284.
Octylene oxide. B. 145°-----	$C_8H_{16}O$ -----	.831, 15°-----	De Clermont. Z. C.
		13, 411.	
Diamylene oxide.-----	$C_{10}H_{20}O$ -----	.9402, 0°-----	Schneider. A. C. P.
B. 185°.		157, 221.	
Diethylene dioxide.-----	$C_4H_8O_2$ -----	1.0482, 0°-----	Wurtz. J. 15, 423.
B. 102°.			
Ethylene ethylidene di- oxide. B. 82° .5.	"-----	1.0002, 0°-----	Wurtz. J. 14, 656.
Ethylene glycol. B. 197°-----	$C_2H_4(OH)_2$ -----	1.125, 0°-----	Wurtz. Ann. (3),
" "-----	"-----	.9444, 195°-----	55, 410.
" "-----	"-----		Ramsay. J. C. S.
" "-----	"-----	1.11678, 15°-----	35, 463.
" "-----	"-----	1.11208, 25°-----	Perkin. J. P. C.
" "-----	"-----	1.1072, 20°-----	(2), 32, 523.
Trimethylene glycol.-----	$C_3H_6(OH)_2$ -----	1.053, 19°-----	Brühl. Ber. 4, 782.
B. 216°.			Reboul. C. R. 79,
" "-----	"-----	1.0536, 18°-----	169.
" "-----	"-----		Freund. J. C. S. 42,
" "-----	"-----	1.0625, 0°-----	156.
" "-----	"-----	.9028, 214°-----	Zander. A. C. P.
Propylene glycol. B. 188°-----	"-----	1.051, 0°-----	214, 181.
" "-----	"-----	1.038, 23°-----	Wurtz. J. 10, 464.
" "-----	"-----	1.054, 0°-----	Belohoubek. Ber.
" "-----	"-----		12, 1873.
" "-----	"-----	1.047, 19°-----	Loebisch and Looss.
" "-----	"-----		J. C. S. 42, 377.
" "-----	"-----	1.0527, 0°-----	Zander. A. C. P.
" "-----	"-----	.8899, 188° .5-----	214, 181.
Butylene glycol. B. 183° .5-----	$C_4H_8(OH)_2$ -----	1.048, 0°-----	Wurtz. J. 12, 499.
Dimethylethyleneglycol.-----	"-----	1.0259, 0°-----	Wurtz. C. R. 97,
B. 207° .5.			473.
Ethylethylene glycol.-----	"-----	1.0189, 0°-----	Grabowsky and
" "-----	"-----	1.0059, 17° .5-----	Saytzeff. A. C.
B. 191° .5.			P. 179, 333.
Isobutylene glycol. B. 177°-----	"-----	1.0129, 0°-----	Nevolé. C. R. 83,
" "-----	"-----	1.0003, 20°-----	67.

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Amylene glycol. B. 177°	$C_5 H_{10} (O H)_2$ -----	.987, 0°-----	Wurtz. J. 11, 424.
Ethylmethylethylene glycol. B. 187°·5.	"-----	.9945, 0°-----	{ Wagner and Sayt- zeff. A. C. P. 179, 309.
Isopropylethylene gly- col. B. 206°.	"-----	.9987, 0°-----	
Methylpropylethylene glycol. B. 207°.	$C_6 H_{12} (O H)_2$ -----	.9843, 21°·5 } .9669, 0°-----	Flavitsky. A. C. P. 179, 353.
Dimethylbutyleneglycol.	"-----	.9759, 0°-----	Wurtz. J. 17, 516.
" " B. 220°	"-----	.9604, 24°-----	
Pseudoxyethylene glycol.	"-----	.9638, 0°-----	Sorokin. B. S. C. 31, 72.
" " "-----	"-----	.9202, 65°-----	
δ. Hexylene glycol-----	"-----	.9809, 0°-----	Wurtz. J. 17, 513.
Pinakone. B. 177°-----	"-----	.96, 15°-----	Lipp. Ber. 18, 3283.
"-----	"-----	.96718, 15°-----	Linnemann. J. 18, 315.
"-----	"-----	.96087, 25°-----	
Octylene glycol.	$C_8 H_{16} (O H)_2$ -----	.932, 0°-----	Perkin. J. P. C. (2), 32, 523.
" B. 235°-240°	"-----	.920, 20°-----	DeClermont. J. 17, 517.
Butyrone pinakone	$C_{14} H_{28} (O H)_2$ -----	.87, 20°-----	Kurtz. A. C. P. 161, 205.
Diethylene alcohol-----	$C_4 H_{10} O_3$ -----	1.132, 0°-----	Wurtz. J. 16, 489.
Triethylene alcohol-----	$C_6 H_{14} O_4$ -----	1.138-----	" "
Methylenedimethylether, or methylal.	$C H_2 (O C H_3)_2$ -----	.8551-----	Malaguti. Ann. (2), 70, 394.
" " "	"-----	.8604, 20°-----	Brühl. A. C. P. 203, 1.
" " "	"-----	.854, 20°-----	Arnhold. A. C. P. 240, 192.
Methylene diethyl ether--	$C H_2 (O C_2 H_5)_2$ -----	.851, 0°-----	Greene. J. Am. C. S. 1, 523.
" " "-----	"-----	.8275, 16°·5-----	L. Henry. C. R. 101, 599.
" " "-----	"-----	.834, 20°-----	Arnhold. A. C. P. 240, 192.
Methylene dipropyl ether.	$C H_2 (O C_3 H_7)_2$ -----	.8345, 20°-----	" "
Methylene diisopropyl ether.	"-----	.831, 20°-----	" "
Methylene diisobutyl ether.	$C H_2 (O C_4 H_9)_2$ -----	.825, 20°-----	" "
Methylenediisoamylether	$C H_2 (O C_5 H_{11})_2$ -----	.835, 20°-----	" "
Methylene dicityl ether--	$C H_2 (O C_8 H_{17})_2$ -----	.846, 20°-----	" "
Ethylene monethyl ether--	$C_2 H_4 \cdot O H \cdot O C_2 H_5$ -----	.926, 13°-----	Demole. Ber. 9, 746.
Ethylene diethyl ether---	$C_2 H_4 \cdot (O C_2 H_5)_2$ -----	.7993, 0°-----	Wurtz. J. 11, 423.
Ethidene dimethyl ether, or dimethyl acetal.	$C_2 H_4 \cdot (O C H_3)_2$ -----	.8555, 0°-----	Wurtz. J. 9, 597.
" " "-----	"-----	.8674, 1°-----	Alsberg. J. 17, 485.
" " "-----	"-----	.8787, 0°-----	
" " "-----	"-----	.8590, 14°-----	
" " "-----	"-----	.8503, 22°-----	Dancer. J. 17, 484.
" " "-----	"-----	.8497, 23°-----	
" " "-----	"-----	.8476, 25°-----	
" " "-----	"-----	.8554, 15°-----	Kraemer and Grodz- ki. Ber. 9, 1930.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethidene dimethyl ether, or dimethyl acetal.	$C_2H_4 \cdot (O \cdot C \cdot H_3)_2$	.8655, 22°	Bachmann, A. C. P. 218, 49.
" " "	"	.8013, 62° .7	Schiff, G. C. I. 13, 177.
" " "	"	.85739, 15°	Perkin, J. P. C.
" " "	"	.81764, 25°	(2), 32, 523.
Ethidene-methylethylether, or methylethylacetal.	$C_2H_4 \cdot (OCH_3)(OC_2H_5)$	.8535, 0°	Wurtz, J. 9, 597.
" " "	"	.8133, 22°	Bachmann, A. C. P. 218, 49.
" " "	"	.8655, 22°	Bachmann, A. C. P. 218, 53.
Ethidene diethyl ether, or acetal.	$C_2H_4 \cdot (O \cdot C_2H_5)_2$	.812, 21°	Dobereiner.
" " "	"	.823, 20°	Liebig, A. C. P. 5, 25.
" " "	"	.821, 22° .4	Stes, J. 1, 697.
" " "	"	.8314, 20°	Bruhl, A. C. P. 263, 1.
" " "	"	.829, 13°	Engel and Girard, C. R. 90, 692.
" " "	"	.7363	(Schiff, G. C. I. 13,
" " "	"	.7365	177.)
" " "	"	.826, 14°	Laatsch, A. C. P. 218, 26.
" " "	"	.8210, 22°	Bachmann, A. C. P. 218, 49.
" " "	"	.83187, 15°	Perkin, J. P. C.
" " "	"	.82331, 25°	(2), 32, 523.
Ethidene dipropyl ether, or propylacetal. B. 147°	$C_2H_4 \cdot (O \cdot C_3H_7)_2$	.825, 22° .5	Girard, Ber. 13, 2232.
Ethidene diisobutyl ether, or isobutylacetal. B. 139°	$C_2H_4 \cdot (O \cdot C_4H_9)_2$	.816, 22°	" "
Ethidene diamyl ether, or diamyl acetal.	$C_2H_4 \cdot (O \cdot C_5H_{11})_2$	.8317, 15°	Alberg, J. 17, 485.
" " "	"	.8012, 22°	Bachmann, A. C. P. 218, 49.
Propidene dipropyl ether	$C_3H_6 \cdot (O \cdot C_3H_7)_2$	.8495, 0°	Schudel, J. C. S. 16, 1283.
Butidene diethyl ether, or isobutylacetal.	$C_4H_{10} \cdot (O \cdot C_2H_5)_2$	.9657, 12° .4	Oeconomides, Ber. 14, 1201.
Dimethyl valeral	$C_5H_{10} \cdot (O \cdot C \cdot H_3)_2$	.852, 10°	Alberg, J. 17, 486.
Diethyl valeral	$C_5H_{10} \cdot (O \cdot C_2H_5)_2$	.835, 12°	" "
Diamyl valeral	$C_5H_{10} \cdot (O \cdot C_5H_{11})_2$	.846, 7°	Alberg, J. 17, 485.
Ethidene oxymethylate	$C_2H_4 \cdot O \cdot (O \cdot C \cdot H_3)_2$	.833, 12° .5	Laatsch, A. C. P. 218, 13.
Ethidene oxyethylate	$C_2H_4 \cdot O \cdot (O \cdot C_2H_5)_2$	.891, 11°	" "
Ethidene oxypropylate	$C_2H_4 \cdot O \cdot (O \cdot C_3H_7)_2$	.895, 11°	" "
Ethidene oxyisobutylate	$C_2H_4 \cdot O \cdot (O \cdot C_4H_9)_2$	.879, 11°	" "
Ethidene oxyisomylate	$C_2H_4 \cdot O \cdot (O \cdot C_5H_{11})_2$	.874, 11°	" "
Ethylene diacetate	$C_2H_4 \cdot (C_2H_3O_2)_2$	1.128, 0°	Wurtz, J. 12, 485.
" " "	"	1.1564, 20°	Bruhl, Ber. 1, 782.
" " "	"	1.11076, 15°	Perkin, J. P. C.
" " "	"	1.10183, 25°	(2), 32, 523.
Ethylene dipropionate	$C_2H_4 \cdot (C_3H_5O_2)_2$	1.05440, 15°	" "
" " "	"	1.04566, 25°	" "
Ethylene dibutyrate	$C_2H_4 \cdot (C_4H_7O_2)_2$	1.024, 0°	Wurtz, J. 12, 486.
Propylene diacetate	$C_3H_6 \cdot (C_2H_3O_2)_2$	1.109, 0°	Wurtz, J. 10, 464.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Propylene diacetate-----	$C_3 H_6 \cdot (C_2 H_3 O_2)_2$ ----	1.070, 19° ----	Reboul. C. R. 79, 169.
Propylene divalerate-----	$C_3 H_6 \cdot (C_5 H_9 O_2)_2$ ----	.98, 12° -----	Reboul. J. C. S. 36, 127.
$\beta$ . Butylene monacetate --	$C_4 H_8 \cdot O H \cdot (C_2 H_3 O_2)$ ----	1.055, 0° -----	Wurtz. C. R. 97, 473.
Hexylene diacetate -----	$C_6 H_{12} \cdot (C_2 H_3 O_2)_2$ ----	1.014, 0° -----	Wurtz. J. 17, 516.
Pseudo-hexylene diacetate	" "-----	1.009, 0° -----	Wurtz. J. 17, 513.
Ethidene diacetate-----	$C_2 H_4 \cdot (C_2 H_3 O_2)_2$ ----	1.060, 12° -----	Schiff. Ber. 9, 306.
" "-----	" "-----	1.073, 15° -----	Franchimont. J. C. S. 44, 452.
" "-----	" "-----	1.073, 15° -----	Rübencamp. A. C. P. 225, 267.
" "-----	" "-----	1.07, 10° -----	Geuther. J. 17, 329.
Ethidene acetate propionate. " "-----	$C_2 H_4 \cdot \left. \begin{matrix} (C_2 H_3 O_2) \\ (C_3 H_5 O_2) \end{matrix} \right\}$ -----	$\left. \begin{matrix} 1.046 \\ 1.042 \end{matrix} \right\} 15^\circ$ ----	$\left\{ \begin{matrix} \text{Two preparations.} \\ \text{Rübencamp. A. C. P. 225, 267.} \end{matrix} \right.$
Ethidene dipropionate --	$C_2 H_4 \cdot (C_3 H_5 O_2)_2$ ----	1.020, 15° -----	Rübencamp. A. C. P. 225, 267.
Ethidene acetate butyrate-----	$C_2 H_4 \cdot \left. \begin{matrix} (C_2 H_3 O_2) \\ (C_4 H_7 O_2) \end{matrix} \right\}$ -----	$\left. \begin{matrix} 1.016, 15^\circ \\ 1.013, 15^\circ \end{matrix} \right\}$ ----	$\left\{ \begin{matrix} \text{Two preparations.} \\ \text{Rübencamp. A. C. P. 225, 267.} \end{matrix} \right.$
Ethidene dibutyrate -----	$C_2 H_4 \cdot (C_4 H_7 O_2)_2$ ----	.9855, 15° -----	Rübencamp. A. C. P. 225, 267.
Ethidene acetate valerate-----	$C_2 H_4 \cdot \left. \begin{matrix} (C_2 H_3 O_2) \\ (C_5 H_9 O_2) \end{matrix} \right\}$ -----	.991, 15° -----	" "
Ethidene divalerate-----	$C_2 H_4 \cdot (C_5 H_9 O_2)_2$ ----	.947, 15° -----	" "
Ethidene oxyformate-----	$C_6 H_{10} O_5$ -----	1.134, 21° -----	Geuther. A. C. P. 226, 223.
Ethidene oxyacetate-----	$C_8 H_{14} O_5$ -----	1.071, 16° -----	" "
Ethidene oxypropionate-----	$C_{10} H_{18} O_5$ -----	1.027, 26° -----	" "
Ethidene oxybutyrate-----	$C_{12} H_{22} O_5$ -----	.994, 20° -----	" "

## 9th. Ethers of Carbonic Acid.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl carbonate -----	$(C H_3)_2 \cdot C O_3$ -----	1.069, 22° -----	Coumcler. Ber. 13, 1638.
" "-----	"-----	1.065, 17° -----	B. Rose. Ber. 13, 2418.
" "-----	"-----	1.060 -----	Schreiner. Ber. 13, 2080.
Methyl ethyl carbonate. B. 104°.	$C H_3 \cdot C_2 H_5 \cdot C O_3$ ----	1.0372 -----	" "
" " " B. 115°.	"-----	1.0016 -----	" "
Ethyl carbonate-----	$(C_2 H_5)_2 \cdot C O_3$ -----	.975, 19° -----	Ettling. A. C. P. 19, 17.
" "-----	"-----	.9998, 0° -- }	Kopp. A. C. P. 95, 307.
" "-----	"-----	.9780, 20° -- }	
" "-----	"-----	.9762, 20° -----	Brühl. A. C. P. 203, 1.
" "-----	"-----	.9735 -----	Schreiner. Ber. 13, 2080.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl propyl carbonate	$C_2H_5, C_3H_7, C O_3$	.9516, 20°	Pawlewski. Ber. 17, 1607.
Propyl carbonate	$(C_3H_7)_2, C O_3$	.968, 22°	Calhoun. C. R. 77, 746.
" "	"	.949, 17°	Rose. Ber. 13, 2418.
Butyl carbonate	$(C_4H_9)_2, C O_3$	.9407, 0°	Lieben and Rossi. A. C. P. 165, 109.
" "	"	.9244, 20°	
" "	"	.9111, 40°	
Isobutyl carbonate	"	.919, 15°	Rose. Ber. 13, 2418.
Isoamyl carbonate	$(C_5H_{11})_2, C O_3$	.9114	Medlock. J. 2, 430.
" "	"	.9065, 15°·5	Bruce. J. 5, 695.
" "	"	.912, 15°	Rose. Ber. 13, 2418.
Ethyl orthocarbonate	$(C_2H_5)_4, C O_4$	.925	Bassett. J. 17, 477.
Propyl orthocarbonate	$(C_3H_7)_4, C O_4$	.911, 8°	Rose. Ber. 13, 2419.
Isobutyl orthocarbonate	$(C_4H_9)_4, C O_4$	.900, 8°	" "

## 10th. Acids and Ethers of the Oxalic Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Oxalic acid	$C_2H_2O_4$	2.00, 9°	Husemann. B. D. Z.
" "	$C_2H_2O_4 \cdot 2H_2O$	1.507	Richter.
" "	"	1.622	Playfair and Joule. M. C. S. 2, 401.
" "	"	1.629	Buignet. J. 14, 15.
" "	"	1.63, 9°	Husemann. B. D. Z.
" "	"	1.680	Schroder. Ber. 10, 851.
" "	"	1.531	Rudorff. Ber. 12, 251.
" "	"	1.57	W. C. Smith. Am. J. P. 53, 145.
" "	"	1.653, 18°·5	Wilson. F. W. C.
Succinic acid	$C_4H_6O_4$	1.55	Richter.
" "	"	1.529, 9°, sublimed.	Husemann. B. D. Z.
" "	"	1.552, 9°, cryst.	
" "	"	1.567	Schroder. Ber. 10, 851.
Ethyl oxalic acid	"	1.2175, 20°	Anschutz. Ber. 16, 2412.
Pyrotartaric acid	$C_5H_4O_4$	1.408	Schroder. Ber. 13, 1070.
" "	"	1.413	
Methylisopropylmalonic acid.	$C_7H_{12}O_4$	.990, 15°	Romburgh. J. C. S. 52, 232.
Selagic acid	$C_{10}H_{18}O_4$	1.1317, fused	Carbutt. J. 6, 429.
Methyl oxalate	$C_4H_6O_4$	1.1566, 50°	Kepp. A. C. P. 95, 307.
" "	"	1.1479, 54°	Weger. A. C. P. 221, 61.
" "	"	1.0039, 163°·3	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl ethyl oxalate	$C_3 H_8 O_4$	1.27, 12°	Chancel. J. 3, 470.
" " "	"	1.15565, 0°	{ Wiens. Königs- berg Inaug. Diss. 1887.
" " "	"	.94693, 173°.7	
Ethyl oxalate	$C_6 H_{10} O_4$	1.0929, 7°.5	Dumas and Boullay. P. A. 12, 430.
" " "	"	1.086, 12°	Delffs. J. 7, 26.
" " "	"	1.1010, 5°—10°	
" " "	"	1.0953, 10°—15°	} Regnault. P. A. 62, 50.
" " "	"	1.0898, 15°—20°	
" " "	"	1.1016, 0°	} Kopp. A. C. P. 94, 257.
" " "	"	1.0815, 18°.2	
" " "	"	1.0824, 15°	} Mendelejeff. J. 13, 7.
" " "	"	1.0793, 20°	
" " "	"	1.1023	} Weger. A. C. P. 221, 61.
" " "	"	1.1029	
" " "	"	1.1030	
" " "	"	1.08563, 15°	} Perkin. J. P. C. (2), 32, 523.
" " "	"	1.07609, 25°	
Propyl oxalate	$C_8 H_{14} O_4$	1.018, 22°	Cahours. Les Mon- des, 32, 280.
" " "	"	1.0384, 0°	{ Wiens. Königs- berg Inaug. Diss. 1887.
" " "	"	.80601, 213°.5	
Butyl oxalate	$C_{10} H_{18} O_4$	1.002, 14°	Cahours. C. C. 5, 20.
" " "	"	1.0099, 0°	{ Wiens. Königs- berg Inaug. Diss. 1887.
" " "	"	.780, 243°.4	
Ethyl heptyl oxalate	$C_{11} H_{20} O_4$	.99542, 0°	{ " "
" " "	"	.75493, 263°.71	
Amyl oxalate	$C_{12} H_{22} O_4$	.968, 11°	Delffs. J. 7, 26.
Propyl heptyl oxalate	"	.981435, 0°	{ Wiens. Königs- berg Inaug. Diss. 1887.
" " "	"	.72669, 284°.4	
Propyl octyl oxalate	$C_{13} H_{24} O_4$	.97245, 0°	{ " "
" " "	"	.71512, 291°.1	
Methyl malonate	$C_5 H_8 O_4$	1.135, 22°	Osterland. J. C. S. (2), 13, 142.
" " "	"	1.16028, 15°	} Perkin. J. P. C. (2), 32, 523.
" " "	"	1.15110, 25°	
" " "	"	1.1753, 0°	{ Wiens. Königs- berg Inaug. Diss. 1887.
" " "	"	.95686, 180°.7	
Ethyl malonate	$C_7 H_{12} O_4$	1.068, 18°	Conrad and Bischoff. A. C. P. 204, 127.
" " "	"	1.06104, 15°	} Perkin. J. P. C. (2), 32, 523.
" " "	"	1.05248, 25°	
" " "	"	1.07607, 0°	{ Wiens. Königs- berg Inaug. Diss. 1887.
" " "	"	.86227, 198°.4	
Ethyl propyl malonate	$C_8 H_{14} O_4$	1.04977, 0°	{ " "
" " "	"	.83542, 211°	
Propyl malonate	$C_9 H_{16} O_4$	1.02705, 0°	{ " "
" " "	"	.79966, 228°.3	
Butyl malonate	$C_{11} H_{20} O_4$	1.0049, 0°	{ " "
" " "	"	.800073, 251°.5	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl succinate	$C_6 H_{10} O_4$	1.1179, 26°	Fehling. A. C. P. 49, 195.
" "	"	1.1162, 18°	} Weger. A. C. P. 221, 61.
" "	"	.91200, 195°.2	
" "	"	1.12611, 15°	
" "	"	1.11718, 25°	
Methyl ethyl succinate	$C_7 H_{12} O_4$	1.0925, 0°	} Weger. A. C. P. 221, 61.
" "	"	.86482, 208°.2	
Ethyl succinate	$C_8 H_{14} O_4$	1.036	} D'Arcet. Ann. (2), 58, 291.
" "	"	1.0718, 0°	
" "	"	1.0475, 25°.5	} Kopp. A. C. P. 95, 307.
" "	"	1.0592	
" "	"	1.0300, 0°	} Weger. A. C. P. 221, 61.
" "	"	.82726, 215°.4	
" "	"	1.04645, 15°	} Perkin. J. P. C. (2), 32, 523.
" "	"	1.03832, 25°	
Ethyl propyl succinate	$C_9 H_{16} O_4$	1.03866, 0°	} Wiens. Königs-berg Inaug. Diss. 1887.
" "	"	.81476, 231°.1	
Propyl succinate	$C_{10} H_{18} O_4$	1.0189, 0°	} " "
" "	"	.78183, 247°.1	
Isopropyl succinate	"	1.009, 0°	} Silva. C. R. 69, 416.
" "	"	.997, 18°.5	
Ethyl butyl succinate	"	1.02178, 0°	} Wiens. Königs-berg Inaug. Diss. 1887.
" "	"	.78572, 247°	
Propyl butyl succinate	$C_{11} H_{20} O_4$	1.0106, 0°	} " "
" "	"	.77587, 258°.7	
Isobutyl succinate	$C_{12} H_{22} O_4$	.97374, 15°	} Perkin. J. P. C. (2), 32, 523.
" "	"	.96670, 25°	
Ethyl heptyl succinate	$C_{13} H_{24} O_4$	.98503, 0°	} Wiens. Königs-berg Inaug. Diss. 1887.
" "	"	.73134, 291°.4	
Isoamyl succinate	$C_{14} H_{26} O_4$	.9612, 13°	} Guareschi and Del Zanna. Ber. 12, 1699.
" "	"		
Heptyl succinate	$C_{15} H_{28} O_4$	.951846, 0°	} Wiens. Königs-berg Inaug. Diss. 1887.
" "	"	.68174, 356°.1	
Ethyl methylmalonate	$C_8 H_{14} O_4$	1.021, 22°	} Conrad and Bischoff. A. C. P. 204, 202.
" "	"	1.02132, 15°	
" "	"	1.01295, 25°	} Perkin. J. P. C. (2), 32, 523.
Methyldimethylsuccinate	"	1.0598, 16°	
" "	"		} Barnstein. A. C. P. 242, 126.
Methyl ethylsuccinate	"	1.051, 34°	
" "	"		} Polko. A. C. P. 242, 113.
Ethyl pyrotartrate	$C_9 H_{16} O_4$	1.025, 21°	
" "	"	1.01885, 15°	} Perkin. J. P. C. (2), 32, 523.
" "	"	1.01126, 25°	
Ethyl ethylmalonate	"	1.008, 18°	} Conrad and Bischoff. A. C. P. 204, 135.
" "	"		
" "	"	1.01235, 15°	} Perkin. J. P. C. (2), 32, 523.
" "	"	1.00441, 25°	
Ethyl dimethylmalonate	"	.9965, 15°	Thorne. Ber. 14, 1644.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl dimethylmalonate	$C_9 H_{16} O_4$	1.00153, 15°	Perkin. J. P. C.
"	"	.99356, 25°	(2), 32, 523.
Ethyl adipate	$C_{10} H_{18} O_4$	1.001, 20°.5	Malaguti. A. C. P.
"	"		56, 306.
Ethyl methylethylmalonate.	"	.994, 15°	Conrad and Bischoff.
"	"		Ber. 13, 595.
Ethyl propylmalonate	"	.99309, 15°	Perkin. J. P. C.
"	"	.98541, 25°	(2), 32, 523.
Ethyl isopropylmalonate	"	.997, 20°	Conrad and Bischoff.
"	"		Ber. 13, 595.
"	"	.99271, 15°	Perkin. J. P. C.
"	"	.98521, 25°	(2), 32, 523.
Ethyl dimethylsuccinate	"	.9976, 17°	Levy and Engländer. A. C. P. 242, 201.
"	"		
"	"	1.0134, 17°	Barnstein. A. C. P.
"	"		242, 126.
Ethyl ethylsuccinate	"	1.030, 21°	Polko. A. C. P. 242, 113.
Ethyl diethylmalonate	$C_{11} H_{20} O_4$	.990, 16°	Conrad and Bischoff.
"	"		A. C. P. 204, 139.
"	"	1.0041, 0°	Shukowski. Ber. 21, ref. 57.
"	"	.9901, 15°	
"	"	.99167, 15°	Perkin. J. P. C.
"	"	.98441, 25°	(2), 32, 523.
Ethyl isobutylmalonate	"	.983, 15°	Conrad and Bischoff.
"	"		Ber. 13, 595.
Ethyl secondary-butylmalonate.	"	.988, 15°	Romburgh. Ber. 20, ref. 376
Ethyl methylisopropylmalonate.	"	.990, 15°	Romburgh. Ber. 20, ref. 469.
Methyl suberate	$C_{10} H_{18} O_4$	1.014, 18°	Laurent. Ann. (2), 66, 162.
Ethyl suberate	$C_{12} H_{22} O_4$	1.003, 18°	Laurent. Ann. (2), 166, 160.
"	"	.991, 15°	Hell. B. S. C. 19, 365.
"	"	.98519, 15°	Perkin. J. P. C.
"	"	.97826, 25°	(2), 32, 523.
Ethyl tetramethylsuccinate.	"	1.012, 0°	Hell and Wittekind.
"	"	1.0015, 13°.5	Ber. 7, 319.
Methyl sebate	"	.985, 60°, 1.	Neison. J. C. S. (3), 1, 316.
Ethyl sebate	$C_{14} H_{26} O_4$	.965, 16°	Neison. J. C. S. (3), 1, 318.
"	"		
"	"	.96824, 15°	Perkin. J. P. C.
"	"	.96049, 25°	(2), 32, 523.
Butyl sebate	$C_{18} H_{34} O_4$	.9417, 0°	Gehring. C. R. 104, 1289.
"	"	.9329, 15°	
Amyl sebate	$C_{20} H_{38} O_4$	.951, 18°	Neison. C. N. 32, 298.
Ethyl dioctylmalonate	$C_{28} H_{44} O_4$	.896, 18°	Conrad and Bischoff.
"	"		Ber. 13, 595.
Ethyl acetomalonnate	$C_9 H_{14} O_5$	1.080, 23°	Ehrlich. B. S. C. 23, 73.
Ethyl acetosuccinate	$C_{10} H_{16} O_5$	1.079, 21°	Conrad. B. S. C. 23, 73.
"	"		
"	"	1.08809, 15°	Perkin. J. P. C.
"	"	1.08049, 25°	(2), 32, 523.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl acetoglutarate	$C_{11}H_{18}O_5$	1.0505, 14°	Wislicenus and Limpach. A. C. P. 192, 130.
Ethyl $\beta$ methylacetosuccinate.	"	1.061, 27°	Hardtmuth. A. C. P. 192, 142.
Ethyl $\alpha$ methylacetoglutarate.	$C_{12}H_{20}O_5$	1.043, 20°	Wislicenus and Limpach. A. C. P. 192, 133.
Ethyl dimethylacetosuccinate.	"	1.057, 27°	Hardtmuth. A. C. P. 192, 142.
Ethyl $\beta$ ethylacetosuccinate.	"	1.064, 16°	Thorne. J. C. S. 39, 337.
Ethyl lactosuccinate.	$C_{11}H_{18}O_6$	1.119, 0°	Wurtz and Friedel. J. 14, 378.
Ethyl succinosuccinate.	$C_{12}H_{16}O_6$	1.057, 18°	Hermann. J. C. S. 42, 712.
Ethyl ethidenemalonate.	$C_9H_{11}O_4$	1.0435, 15°	Komninos. A. C. P. 218, 158.

## 11th. Acids and Ethers of the Glycollic Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Glycollic acid	$C_2H_4O_3$	1.197, 13°	Cloez. J. 5, 497.
Lactic acid	$C_3H_6O_3$	1.215, 10°	Guy-Lussac and Pelouze. P. A. 29, 111.
" "	"	1.2485, 15°	Mendeleeff. J. 13, 7.
" "	"	1.2403, 20°	Bruhl. Bei. 4, 782.
Methyl glycollic acid	"	1.180	Heintz. J. 12, 359.
Ethyl oxyisobutyric acid	$C_6H_{12}O_3$	1.0211, 0°	Helland Waldbauer. Ber. 10, 450.
" "	"	1.0101, 16°	"
Amyl glycollic acid	$C_7H_{14}O_3$	1.003	Siemens. J. 14, 151.
Methyl glycollate	$C_3H_6O_3$	1.1862	Schreiner. Bei. 3, 350.
Ethyl glycollate	$C_4H_8O_3$	1.1071	" "
" "	"	1.0333	Fahlberg. J. P. C. (2), 7, 340.
Propyl glycollate	$C_5H_{10}O_3$	1.0837	Schreiner. Bei. 3, 350.
Methyl methylglycollate	$C_4H_8O_3$	1.0845	" "
Ethyl methylglycollate	$C_5H_{10}O_3$	1.0746	" "
Propyl methylglycollate	$C_6H_{12}O_3$	1.0592	" "
Methyl ethylglycollate	$C_5H_{10}O_3$	1.0405	" "
Ethyl ethylglycollate	$C_6H_{12}O_3$	.978	Schreiber. Z. C. 13, 168.
" "	"	.9960	Schreiner. Bei. 3, 350.
Propyl ethylglycollate	$C_7H_{14}O_3$	.9896	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl propylglycollate	$C_6 H_{12} O_3$	.9845	Schreiner. Bei. 3, 350.
Ethyl propylglycollate	$C_7 H_{14} O_3$	.9758	" "
Propyl propylglycollate	$C_8 H_{16} O_3$	.9678	" "
Methyl lactate	$C_4 H_8 O_3$	1.1176	" "
Ethyl lactate	$C_5 H_{10} O_3$	1.0542, 0°	Wurtz and Friedel. J. 14, 373.
" "	"	1.042, 13°	
" "	"	1.0540	Schreiner. Bei. 3, 350.
Ethyl methyl lactate	$C_6 H_{12} O_3$	1.0030	" "
Ethyl ethyl lactate	$C_7 H_{14} O_3$	.9203, 0°	Wurtz. J. 12, 294.
" "	"	.9540	Schreiner. Bei. 3, 350.
Ethyl oxyisobutyrate	$C_6 H_{12} O_3$	.9931, 13°	Frankland and Duppa. P.T. 1866, 309.
" "	"	1.0750	Schreiner. Bei. 3, 350.
Ethyl methoxybutyrate	$C_7 H_{14} O_3$	.9768, 13°	Frankland and Duppa. J. 18, 381.
" "	"	1.0100	Schreiner. Bei. 3, 350.
Ethyl ethoxybutyrate	$C_8 H_{16} O_3$	.930, 19°	Duvillier. Ann. (5), 17, 533.
" "	"	.9540	Schreiner. Bei. 3, 350.
Methyl diethoxyacetate	$C_7 H_{14} O_3$	.9896, 16°.5	Frankland and Duppa. P.T. 1866, 309.
Ethyl diethoxyacetate	$C_8 H_{16} O_3$	.9613, 18°.7	" "
" "	"	.98	L. Henry. B. S. C. 19, 212.
Amyl diethoxyacetate	$C_{11} H_{22} O_3$	.93227, 13°	Frankland and Duppa. P.T. 1866, 309.
Ethyl amylhydroxalate	$C_9 H_{18} O_3$	.9449, 13°	Frankland and Duppa. J. 18, 382.
Ethyl ethylamylhydroxalate.	$C_{11} H_{22} O_3$	.9399, 13°	Frankland and Duppa. P.T. 1866, 309.
Ethyl diamylloxalate	$C_{14} H_{28} O_3$	.9137, 13°	Frankland and Duppa. J. 18, 383.
Ethyl acetoglycollate	$C_6 H_{10} O_4$	1.0093, 17°	Heintz. J. 15, 292.
Ethyl acetolactate	$C_7 H_{12} O_4$	1.0458, 17°	Wislicenus. J. 15, 300.
Ethyl propionoglycollate	"	1.0052, 22°	Senf. Ber. 14, 2416.
Ethyl butyroglycollate	$C_8 H_{14} O_4$	1.0288, 22°	" "
Ethyl isobutyroglycollate	"	1.0240, 22°.5	" "
Ethyl butyrolactate	$C_9 H_{16} O_4$	1.024, 0°	Wurtz. J. 12, 295.
" "	"	1.028, 0°	Wurtz. J. 13, 273.
Laetyl ethyl lactate	$C_8 H_{14} O_5$	1.134, 0°	Wurtz and Friedel. J. 14, 377.
Ethyl diethylglyoxylate	$C_8 H_{16} O_4$	.994, 18°	Schreiber. Z. C. 13, 168.
Oxybutyric lactone	$C_4 H_6 O_2$	1.1441, 0°	Saytzeff. Ber. 14, 2688.
" "	"	1.1286, 16°	
" "	"	1.1302, 20°	Frühling. Ber. 15, 2622.
" "	"	1.1295, 10°	Henry. C. R. 101, 1158.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethylbutyric lactone.	$C_6 H_{10} O_2$	1.0348, 16°	Chanlaroff, A. C. P. 226, 339.
Heptolactone	$C_7 H_{12} O_2$	.9818, 4°	Author. Ber. 14, 1718.
"	"	.992, 16°	Young, A. C. P. 216, 41.

## 12th. Acids and Ethers of the Pyruvic Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Pyruvic, pyroracemic, or acetyl-formic acid.	$C_3 H_4 O_3$	1.288, 18°	Valekol. J. 6, 426.
" "	"	1.2792	Berzelius.
" "	"	1.2403	Claisen and Shad- well, Ber. 11, 1567.
" "	"	1.2600	Claisen and Shad- well, Ber. 11, 621.
" "	"	1.2415	Claisen and Meritz. Ber. 13, 2122.
Propionyl-formic acid	$C_4 H_6 O_3$	1.2000, 17°.	Conrad. Ber. 11, 2178.
$\beta$ . Acetyl-propionic, or laevulinic acid.	$C_5 H_8 O_3$	1.135, 15°	
Methyl pyruvate	$C_4 H_6 O_3$	1.151, 0°	Oppenheim, B. S. C. 19, 251.
Methyl acetacetate	$C_5 H_8 O_3$	1.037, 9°	Brandes, J. 19, 306.
Ethyl acetacetate	$C_6 H_{10} O_3$	1.03, 5°	Geuther, J. 18, 303.
" "	"	1.0256, 20°	Bruhl, A. C. P. 203, 1.
" "	"	1.030, 15°	Eliott, Ber. 17, ref. 568.
" "	"	1.0465, 0°	
" "	"	.9880, 55°.	
" "	"	.9614, 79°.	Schiff, Ber. 19, 560.
" "	"	.9629, 135°.	
" "	"	.8458, 180°	
" "	"	1.0317, 15°	Perkin, J. P. C. (2), 32, 523.
" "	"	1.02353, 25°	
Isobutyl acetacetate	$C_8 H_{14} O_3$	.979, 0°	Emmerling and Oppenheim, Ber. 9, 1097.
" "	"	.932, 23°	
Amyl acetacetate	$C_9 H_{16} O_3$	.951, 10°	Conrad, A. C. P. 186, 231.
Methyl methylacetacetate	$C_6 H_{10} O_3$	1.020, 9°	Brandes, J. 19, 306.
Ethyl methylacetacetate	$C_7 H_{10} O_3$	.995, 14°	" "
Methyl laevulinate	$C_6 H_{10} O_3$	1.0684, 0°	{ Grote, Kehler, and Tollens, A. C. P. 206, 221.
" "	"	1.0519, 20°	
Ethyl laevulinate	$C_7 H_{12} O_3$	1.0325, 0°	{ " "
" "	"	1.0156, 20°	
Propyl laevulinate	$C_8 H_{14} O_3$	1.0103, 0°	{ " "
" "	"	.9937, 20°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl ethylacetacetate	$C_7 H_{12} O_3$	1.009, 6°	Geuther. J. 18, 303.
Ethyl ethylacetacetate	$C_8 H_{14} O_3$	.998, 12°	" "
" "	"	.981, 16°	James. A. C. P. 226, 202.
" "	"	.9834, 16°	Frankland and Duppa.
Propyl ethylacetacetate	$C_9 H_{16} O_3$	.981, 0°	Burton. A. C. J. 3, 385.
Amyl ethylacetacetate	$C_{11} H_{20} O_3$	.937, 26°	Conrad. A. C. P. 186, 232.
Ethyl dimethylacetacetate	$C_8 H_{14} O_3$	.9913, 16°	Frankland and Duppa. J. 18, 309.
Ethyl propionylpropionate	"	.9948, 0°	{ Hellon and Oppenheim. Ber. 10, 701 and 861.
" "	"	.9827, 15°	
" "	"	.9870, 15°	
Ethyl methylethylacetacetate.	$C_9 H_{16} O_3$	.974, 22°	Israel. A. C. P. 231, 197.
Ethyl isopropylacetacetate	"	.98046, 0°	Saur. A. C. P. 188, 275.
Ethyl methylpropylacetacetate.	$C_{10} H_{18} O_3$	.9575, 17°	Frankland and Duppa. J. 20, 395.
Ethyl isobutylacetacetate.	"	.951, 17°.5	Jones. A. C. P. 226, 288.
Ethyl ethylpropionylpropionate.	"	.966, 15°	Rohn. A. C. P. 190, 307.
Ethyl dipropylacetacetate	$C_{12} H_{22} O_3$	.9585, 0°	Israel. A. C. P. 231, 197.
Ethyl heptylacetacetate	$C_{13} H_{24} O_3$	.9324	Burton. A. C. J. 3, 386.
Ethyl octylacetacetate.	$C_{14} H_{26} O_3$	.9354, 18°.5	Jourdan. Ber. 13, 434.
Ethyl diisobutylacetacetate.	"	.947, 10°	Guthzeit. A. C. P. 204, 3.
Ethyl diheptylacetacetate	$C_{20} H_{38} O_3$	.8907, 17°.5	Mixer. Ber. 7, 501.
Ethyl acetopyruvate	$C_7 H_{10} O_4$	1.124, 21°	Jourdan. J. C. S. 38, 314.
Ethyl diacetylacetate	$C_8 H_{12} O_4$	1.044, 15°	Claisen and Stylos. Ber. 20, 2189.
" "	"	1.1, 15°	Elion. Ber. 16, 1369.
" "	"	1.064, 15°	Elion. Ber. 16, 2762.
Ethyl carbacetacetate	$C_8 H_{10} O_3$	1.136, 27°	James. A. C. P. 226, 202.
Ethyl ethylideneacetacetate.	$C_8 H_{12} O_3$	1.0225, 15°	Duisberg. Ber. 15, 1387.
Ethyl amylideneacetacetate.	$C_{11} H_{18} O_3$	.9612, 15°	Claisen and Matthews. A. C. P. 218, 173.
Ethyl ethoxymethylacetacetate.	$C_9 H_{16} O_4$	.976, 22°	Matthews. Ber. 16, 1372.
Ethyl ethoxyethylacetacetate.	$C_{10} H_{18} O_4$	.957, 22°	Isbert. A. C. P. 234, 195.
			Isbert. A. C. P. 234, 194.

## 13th. Acids and Ethers of the Acrylic Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methacrylic acid	$C_4H_6O_2$	1.0153, 20°	Bühl, Ber. 14, 2800.
$\beta$ . Crotonic, or quartenylic acid.	"	1.018, 25°	Gauthier, J. P. C. (2), 3, 442.
Pyrotartric acid	$C_6H_{10}O_2$	1.01	Rabourdin, A. C. P. 52, 395.
" "	"	1.006, 26°	Mielek, A. C. P. 180, 52.
Methylethylacrylic acid	"	.9812, 25°	Lieben and Zeisel, M. C. 4, 71.
Hydrosorbic acid	"	.969, 19°	Barringer and Fittig, Z. C. 13, 425.
Amyldecanoic acid	$C_{10}H_{18}O_2$	.9096, 0°	Borodin, ?
Moringic acid	$C_{15}H_{28}O_2$	.908, 12°	Walter, C. R. 22, 1143.
Oleic acid	$C_{18}H_{34}O_2$	.808, 19°	Chevreul.
Methyl acrylate, B. 80°/3.	$C_4H_6O_2$	.977, 0°	Kahlbaum, Ber. 13, 2349.
" "	"	.961, 19°	
" "	"	.97388, 0°	
" "	"	.87191, 80°/3	Weger, A. C. P. 221, 61.
Liquid polymer of methyl acrylate, " "	$(C_4H_6O_2)_n$	1.140, 0°	Kahlbaum, Ber. 13, 2349.
" "	"	1.125, 18°	
Solid polymer of methyl acrylate, " "	"	1.2223, 15°/6	" "
" "	"	1.2222, 18°/2	
Ethyl acrylate, B. 98°/5.	$C_5H_8O_2$	.9252, 0°	Caspary and Tollens, B. S. C. 20, 568.
" "	"	.9196, 15°	
" "	"	.93928, 0°	Weger, A. C. P. 221, 61.
" "	"	.81970, 98°/5	
Propyl acrylate, B. 122°/9	$C_6H_{10}O_2$	.91996, 0°	" "
" "	"	.7847, 122°/9	
Methyl crotonate	$C_5H_8O_2$	.9806, 4°	Kahlbaum, Ber. 12, 344.
Ethyl crotonate	$C_6H_{10}O_2$	.9188	Bühl, A. C. P. 235, 1.
" "	"	.9199	
" "	"	.9237	
" "	"	.92680, 15°	
" "	"	.91846, 25°	Perkin, J. P. C. (2), 32, 523.
Ethyl $\beta$ crotonate	"	.927, 19°	Gauthier, J. P. C. (2), 3, 444.
Ethyl angelate	$C_7H_{12}O_2$	.9347, 0°	Beilstein and Wiegand, Ber. 17, 2261.
Ethyl tiglate	"	.926, 21°	Gauthier and Frolich, Z. C. 13, 549.
" "	"	.9425, 0°	Beilstein and Wiegand, Ber. 17, 2261.
Ethyl ethylcrotonate	$C_7H_{14}O_2$	.9203, 13°	Frankland and Duppa, J. 18, 384.
Methyl oleate	$C_{19}H_{36}O_2$	.879, 18°	Laurent, Ann. (2), 65, 294.
Ethyl oleate	$C_{20}H_{38}O_2$	.871, 18°	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl oleate-----	$C_{20} H_{38} O_2$ -----	.87589 } 15°	Perkin. J. P. C. (2), 32, 523.
" "-----	"-----	.87525 }	
" "-----	"-----	.87041 }	
" "-----	"-----	.86991 } 25°	
Methyl elaidate-----	$C_{19} H_{36} O_2$ -----	.872, 18°-----	Laurent. Ann. (2), 65, 294.
Ethyl elaidate-----	$C_{20} H_{38} O_2$ -----	.869, 18°-----	" "

## 14th. Derivatives of the Acrylic Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acrolein, or acrylaldehyde	$C_3 H_4 O$ -----	.8410, 20°-----	Brühl. Bei. 4, 780.
Metacrolein-----	$(C_3 H_4 O)_n$ -----	1.03, 8°-----	Geuther. J. 17, 334.
Acropinacone-----	$C_6 H_{10} O_2$ -----	.99, 17°-----	Linnemann. J. 18, 317.
Acrolein ethylate-----	$C_5 H_{10} O_2$ -----	.936, 4°-----	Taubert. J. C. S. 31, 296.
Acrolein diacetate-----	$C_7 H_{10} O_4$ -----	1.076, 22°-----	Hübner and Geu- ther. J. 13, 307.
Crotonaldehyde-----	$C_4 H_6 O$ -----	1.033, 0°-----	Roseoe and Schor- lemmer's Treatise.
Diacetate from crotonalde- hyde.	$C_8 H_{12} O_4$ -----	1.05, 14°-----	Lagermark and El- tekoﬀ. Ber. 12, 694.
Tiglic aldehyde, or guajol	$C_5 H_8 O$ -----	.871, 15°-----	Völckel. J. 7, 611.
β. Angelicalactone-----	$C_5 H_6 O_2$ -----	1.1084, 0°-----	Wolff. A. C. P. 229, 257.
Methylethylacrolein-----	$C_6 H_{10} O$ -----	.8577, 20°-----	Lieben and Zeisel. M. C. 4, 18.
Amyldecaldehyde-----	$C_{10} H_{18} O$ -----	.862, 0°-----	Borodin. Ber. 5, 480.
"-----	"-----	.848, 20°-----	
"-----	"-----	.861, 0°-----	Gäss and Hell. Ber. 8, 372.
"-----	"-----	.851, 14°-----	
Hexylpentylacrylic alde- hyde. "-----	$C_{14} H_{26} O$ -----	.8494, 15°-----	Perkin, Jr. Ber. 15, 2804.
"-----	"-----	.8416, 30°-----	
"-----	"-----	.8392, 35°-----	
"-----	"-----	.8504, 15°-----	Perkin, Jr. J. C. S. 44, 81.
Hexylpentylacrylic alco- hol. "-----	$C_{14} H_{28} O$ -----	.8520, 15°-----	Perkin, Jr. Ber. 15, 2810.
"-----	"-----	.8444, 30°-----	
"-----	"-----	.8418, 35°-----	
Hexylpentylacrylic ace- tate. "-----	$C_{16} H_{30} O_2$ -----	.8680, 15°-----	Perkin, Jr. Ber. 15, 2809.
"-----	"-----	.8597, 30°-----	
"-----	"-----	.8568, 35°-----	

## 15th. Acids and Ethers, Malic-Tartaric Group.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Malic acid	$C_4 H_6 O_5$	1.559, 4°	Schröder. Ber. 12, 1611.
Tartaric acid	$C_4 H_6 O_6$	1.75	Richter.
" "	"	1.764	Schiff. J. 12, 41.
" "	"	1.739	Buignet. J. 14, 15.
" "	"	1.754	Schröder. Ber. 10, 851.
" "	"	1.77	W. C. Smith. Am. J. P. 53, 145.
" "	"	1.7617	{ Wiedemann and Ludeking, P. A. (2), 25, 151.
" " Amorphous	"	1.6321	
" "	"	1.7594, 7°	Perkin. J. C. S. 51, 366.
Racemic acid	$C_4 H_6 O_6$	1.7782, 7°	" "
" "	$C_4 H_6 O_6 \cdot H_2 O$	1.75	Pasteur. J. 2, 309.
" "	"	1.69	Buignet. J. 14, 15.
" "	"	1.6873, 7°	Perkin. J. C. S. 51, 366.
Laevotartaric acid	"	1.7496	Pasteur. Ann. (3), 28, 72.
Methyl maleate	$C_6 H_8 O_4$	1.1529, 14°	Anschutz. Ber. 12, 2283.
" "	"	1.16029, 11°, 8	{ Knops. V. H. V. 1887, 17.
" "	"	1.15532, 16°, 6	
" "	"	1.15172, 20°	
" "	"	1.15060, 21°	
" "	"	1.14562, 26°	
" "	"	1.14211, 29°, 4	
Ethyl maleate	$C_8 H_{12} O_4$	1.13827, 33°	" "
Propyl maleate	$C_{10} H_{16} O_4$	1.06917, 20°	" "
Ethyl fumarate	$C_8 H_{12} O_4$	1.02899, 20°	Henry. A. C. P. 156, 178.
" "	"	1.106, 11°	Anschutz. Ber. 12, 2282.
" "	"	1.0522, 17°, 5	Knops. V. H. V. 1887, 17.
Propyl fumarate	$C_{10} H_{16} O_4$	1.05199, 20°	{ " "
" "	"	1.02732, 14°, 3	
" "	"	1.02417, 17°, 4	
" "	"	1.02203, 20°	
" "	"	1.02127, 20°, 8	
" "	"	1.01691, 25°, 5	
" "	"	1.01352, 29°, 1	{ " "
" "	"	1.00978, 33°	
Methyl tartrate	$C_6 H_{10} O_6$	1.3403, 15°	Anschutz and Pietet. Ber. 13, 1177.
Ethyl tartrate	$C_8 H_{14} O_6$	1.1989	Landolt. Ber. 9, 910.
" "	"	1.2097, 14°	Anschutz and Pietet. Ber. 13, 1177.
" "	"	1.2097, 15°	{ Perkin. J. C. S. 51, 365.
" "	"	1.2019, 25°	

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Ethyl racemate-----	$C_8 H_{14} O_6$ -----	1.2098, 15°	Perkin. J. C. S. 51, 363.
" "-----	"-----	1.2019, 25°	
Propyl tartrate-----	$C_{10} H_{18} O_6$ -----	1.1392, 17°	Anschütz and Pic-
Isopropyl tartrate-----	$C_{10} H_{18} O_6$ -----	1.1300, 20°	tet. Ber. 13, 1177. Pictet. Ber. 15, 2242.

## 16th. Acids and Ethers, Citric Acid Group.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Citric acid-----	$C_6 H_8 O_7$ -----	1.617-----	Richter.
" "-----	"-----	1.542-----	Schiff. J. 12, 41.
" "-----	"-----	1.553-----	Buignet. J. 14, 15.
" "-----	"-----	1.557-----	W. C. Smith. Am. J. P. 53, 145.
Itaconic acid-----	$C_5 H_6 O_4$ -----	1.573-----	Schröder. Ber. 13, 1070.
" "-----	"-----	1.632-----	
Citraconic acid-----	"-----	1.616-----	" "
" "-----	"-----	1.618-----	
Citraconic anhydride-----	$C_5 H_4 O_3$ -----	1.247-----	Watts' Dictionary.
" "-----	"-----	1.25360, 12° 4	
" "-----	"-----	1.24894, 16° 6	Knops. V. H. V. 1887, 17.
" "-----	"-----	1.24518, 20°	
" "-----	"-----	1.24405, 21°	
" "-----	"-----	1.23920, 25° 4	
" "-----	"-----	1.23501, 29° 2	
" "-----	"-----	1.23073, 33°	
Triethyl citrate-----	$C_{12} H_{20} O_7$ -----	1.142, 21°	Malaguti. A. C. P. 21, 267.
" "-----	"-----	1.1369, 20°	Conen. Ber. 12, 1653.
Tetrethyl citrate-----	$C_{14} H_{24} O_7$ -----	1.1022, 20°	" "
Ethyl aconitate-----	$C_{12} H_{18} O_6$ -----	1.074, 14°	Watts' Dictionary.
" "-----	"-----	1.1064-----	Conen. Ber. 12, 1653.
Ethyl isaconitate-----	"-----	1.0505, 15°	Conrad and Guthzeit. A. C. P. 222, 255.
Methyl itaconate-----	$C_7 H_{10} O_4$ -----	1.1299, 14° 7	Anschütz. Ber. 14, 2787.
" "-----	"-----	1.13195, 12°	Knops. V. H. V. 1887, 17.
" "-----	"-----	1.12410, 18°	
" "-----	"-----	1.12182, 20°	
" "-----	"-----	1.11882, 22° 5	
" "-----	"-----	1.11421, 27° 1	
" "-----	"-----	1.10847, 32° 4	
Polymer of methyl itaconate.	$(C_7 H_{10} O_4)_n$ -----	1.3126, 20°	" "
Ethyl itaconate-----	$C_9 H_{14} O_4$ -----	1.051, 15°	Anschütz. Ber. 14, 2787.
" "-----	"-----	1.04613, 20°	Knops. V. H. V. 1887, 17.
Polymer of ethyl itaconate	$(C_9 H_{14} O_4)_n$ -----	1.2549, 20°	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl citraconate	$C_7 H_{10} O_4$	1.1168, 15°	Perkin. Ber. 14, 2544.
" "	"	1.1172, 13°.8	O. Strecker. Ber. 14, 2785.
" "	"	1.1164, 15°.5	Gladstone. Bei. 9, 249.
" "	"	1.1103, 20°	Knops. V. H. V. 1887, 17.
Ethyl citraconate	$C_9 H_{14} O_4$	1.1050, 15°	Perkin. Ber. 14, 2543.
" "	"	1.038, 30°	Watts' Dictionary.
" "	"	1.010, 18°.5	Petri. Ber. 14, 2785.
" "	"	1.047, 15°	Gladstone. Bei. 9, 249.
" "	"	1.048, 16°.5	Knops. V. H. V. 1887, 17.
" "	"	1.06241, 20°	Perkin. Ber. 14, 2543.
Methyl mesaconate	$C_7 H_{10} O_4$	1.1254, 15°	O. Strecker. Ber. 14, 2785.
" "	"	1.1138, 30°	Gladstone. Bei. 9, 249.
" "	"	1.1293, 11°.8	1.1246, 16°
" "	"	1.12966, 11°.9	1.12462, 16°.4
" "	"	1.12097, 20°	1.12011, 20°.8
" "	"	1.11648, 24°.3	Knops. V. H. V. 1887, 17.
" "	"	1.11180, 28°.6	1.10702, 33°
" "	"	1.043, 20°	Pohal. J. 404.
Ethyl mesaconate	$C_9 H_{14} O_4$	1.051, 15°	Perkin. Ber. 14, 2543.
" "	"	1.039, 30°	Petri. Ber. 14, 2785.
" "	"	1.043, 20°	Gladstone. Bei. 9, 249.
" "	"	1.050, 16°	Knops. V. H. V. 1887, 17.
" "	"	1.04674, 20°	Claus. A. C. P. 191, 78.
Methyl crotaconate	$C_7 H_{10} O_4$	1.11, 15°	Ruhemann. Ber. 20, 802.
Ethyl crotaconate	$C_9 H_{14} O_4$	1.1159, 15°	Roser. A. C. P. 220, 255.
Ethyl terelate	$C_9 H_{14} O_4$	1.111, 16°	

## 17th. Glycerin and its Derivatives.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Glycerin, or glycerol	$C_3 H_5 (O H)_3$	1.27, 10°	Chevreul.
" "	"	1.28, 15°	Pelouze. Ann. (2), 63, 19.
" "	"	1.260, 15° 5'	Watts' Dictionary.
" "	"	1.115, 12° 5'	Sokoloff. A. C. P. 106, 95.
" "	"	1.2636, 15°	Mendelejeff. J. 13, 7.
" "	"	1.26949, 6° 7'	} Mendelejeff. A. C. P. 114, 165.
" "	"	1.26244, 16° 6'	
" "	"	1.2609	Godeffroy. C. C. (3), 6, 34.
" " Cryst.	"	1.261, 15° 5'	Roos. C. N. 33, 39.
" "	"	1.2688, 0°	Emo. Bei. 6, 663.
" "	"	1.2590, 20°	Brühl. Bei. 4, 782.
" "	"	1.262, 17° 5'	Strohmmer. Ber. 17, ref. 206.
" "	"	1.2653, 15°	Gerlach. Ber. 17, ref. 522.
" "	"	1.26241, 15°	} Perkin. J. P. C. (2), 32, 523.
" "	"	1.25881, 25°	
Hexyl glycerin	$C_6 H_{11} (O H)_3$	1.0936, 0°	Orloff. A. C. P. 233, 359.
Triethyl diglycerin	$C_{12} H_{26} O_5$	1.00, 14°	Reboul and Lourenço. J. 14, 675.
Glycerin ether	$(C_3 H_5)_2 O_3$	1.0907, 18°	Gegerfeldt. J. 24, 401.
" "	"	1.16, 16°	Zotta. A. C. P. 174, 87.
" "	"	1.1453, 0°	Silva. J. C. S. 40, 1122.
Glycide	$C_3 H_8 O_2$	1.165, 0°	Hanriot. Ann. (5), 17, 62.
Ethyl glycide	$C_5 H_{10} O_2$	1.00	Reboul. J. 13, 465.
" "	"	.94, 12°	Henry. B. S. C. 18, 232.
Amyl glycide	$C_8 H_{16} O_2$	.90, 20°	Reboul. J. 13, 463.
Aceto-glycerol	$C_5 H_{10} O_3$	1.081, 0°	Harnitzky and Menschutkin. J. 18, 506.
Valero-glycerol	$C_8 H_{16} O_3$	1.027, 0°	" "
Trimethylin	$C_6 H_{14} O_3$	.9483, 0°	Alsberg. J. 17, 495.
Diethylin	$C_7 H_{16} O_3$	.92	Berthelot. J. 7, 450.
Triethylin	$C_9 H_{20} O_3$	.8955, 15°	Alsberg. J. 17, 495.
Triglycerin tetrethylin	$C_{17} H_{36} O_7$	1.022, 14°	Reboul and Lourenço. J. 14, 675.
Ethylamylin	$C_{10} H_{22} O_3$	.92	Reboul. J. 13, 465.
Monamylin	$C_8 H_{18} O_3$	.98, 20°	Reboul. J. 13, 464.
Diamylin	$C_{13} H_{28} O_3$	.907, 9°	Reboul. J. 13, 465.
Monoallylin	$C_6 H_{12} O_3$	1.1160, 0°	} Tollens. A. C. P. 156, 149.
"	"	1.1013, 25°	
Diformin	$C_5 H_8 O_3$	1.304, 15°	Van Romburgh. Ber. 14, 2827.
Monacetin	$C_5 H_{10} O_4$	1.20	Berthelot. J. 6, 455.

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Diacetin	$C_7 H_{12} O_5$	1.184	Berthelot, J. 6, 455.
"	"	1.148, 23°	Lauffer, J. 1876, 343.
Triacetin	$C_9 H_{14} O_6$	1.174	Berthelot, J. 7, 449.
Epiaacetin	$C_9 H_{18} O_5$	1.129, 20°	Breslau, J. P. C. (2), 20, 188.
Polymer of epiaacetin	$(C_9 H_{18} O_5)_n$	1.204, 20°	" "
Monobutyryn	$C_7 H_{14} O_4$	1.088	Berthelot, J. 6, 455.
Dibutyryn	$C_{11} H_{20} O_3$	1.081	" "
"	"	1.084	" "
Tributyryn	$C_{15} H_{26} O_6$	1.056	Berthelot, J. 7, 449.
Monovalerin	$C_8 H_{16} O_4$	1.100	Berthelot, J. 6, 454.
Divalerin	$C_{13} H_{24} O_5$	1.059	" "
Cocinin	$C_{42} H_{80} O_6$	.92, 8°	Brandes.
Tristearin	$C_{57} H_{110} O_6$	.987, 10°	Kepp, A. C. P. 93, 194.
"	"	.9872	Three modifications. Duffy, J. 5, 510.
"	"	.9877, 15°	
"	"	.9867	
"	"	.9600, 51°	
"	"	1.0101, 15°	
"	"	1.0178	
"	"	1.0179, 15°	
"	"	1.009, 54°	
"	"	.9961, 65°	
"	"	.9746, 68°	
" Liquid	"	.9245, 65°	
Monolein	$C_{21} H_{40} O_4$	.947	Berthelot, J. 6, 454.
Dioclein	$C^{39} H_{72} O_5$	.921, 21°	" "
Ethyl glycerate	$C_5 H_{10} O_4$	1.193, 6°	Henry, Ber. 4, 701.
Benzolein	$C_{10} H_{12} O_4$	1.228	Berthelot, J. 6, 455.
Glycerin salicylate	$C_{10} H_{12} O_5$	1.3655	Gottig, Ber. 10, 1818.
Glycerin cinnamate	"	1.2704	Kahlbaum, Ber. 16, 1491.
"	"	1.2708	"

## 18th. The Allyl Group.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Allyl alcohol	$C_3 H_5 O H$	.8581, 0	Tollens and Henning, A. C. P. 156, 134.
"	"	.8478, 27°	
"	"	.8709, 0	Additional values are given. Tollens, A. C. P. 158, 164.
"	"	.81832, 62°	
"	"	.7846, 97	Dittmar and Stewart, P. R. S. G. 10, 64.
"	"	.8569, 15°	
"	"	.86990, 0	Thorpe, J. C. S. 37, 371.
"	"	.77908, 96°	
"	"	.8724, 0°	Zander, A. C. P. 214, 181.
"	"	.7830, 96°	
"	"	.7809, 94°	Schiff, G. C. I. 13, 177.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Allyl alcohol	$C_3 H_5. O H$	.8540, 26°	Brühl. A. C. P. 200, 139.
" "	"	.8563, 23°	Gladstone. Bei. 9, 249.
" "	"	.85778, 15°	Perkin. J. P. C. (2), 32, 523.
" "	"	.85067, 25°	
Ethylvinyl alcohol	$C_4 H_7. O H$	.834, 0°	Névolé. J. C. S. 32, 868.
" "	"	.818, 21°	
" "	"	.827, 0°	Lieben. J. C. S. 32, 868.
" "	"	.81, 22°	
Ethylvinylcarbinol	$C_5 H_{10} O$	.856, 0°	E. Wagner. B. S. C. 42, 330.
Methyl isocrotyl alcohol	$C_6 H_{12} O$	.8604	Wurtz. J. 17, 515.
" " "	"	.8625	
" " "	"	.842, 16° 2	Crow. C. N. 36, 264.
" " " ?	"	.891, 10°	
Allyldimethylcarbinol	"	.8438, 0°	Saytzeff. A. C. P. 185, 151.
" "	"	.8307, 18°	
Diallyl monohydrate	"	.8367, 0°	Wurtz. J. 17, 515.
Allyldiethylcarbinol	$C_8 H_{16} O$	.8891, 0°	{ Schirokoff and Saytzeff. A. C. P. 196, 114.
" "	"	.8711, 20°	
Allylmethylpropylcarbinol.	"	.8486, 0°	Semljanizin. Ber. 12, 2375.
" "	"	.8345, 20°	
Isopropylallyldimethylcarbinol.	$C_9 H_{18} O$	.829, 17° 8.	Dieff. J. P. C. (2), 27, 369.
Allyldipropylcarbinol	$C_{10} H_{20} O$	.8602, 0°	P. and A. Saytzeff. Ber. 11, 1939.
" "	"	.8427, 24°	
Allyldiisopropylcarbinol	"	.8671, 0°	Lebedinsky. J. P. C. (2), 23, 23.
Propargyl alcohol	$C_3 H_4 O$	.9628, 21°	Henry. B. S. C. 18, 236.
" "	"	.9715, 20°	Brühl. Bei. 4, 780.
Diallylcarbinol	$C_7 H_{12} O$	.8758, 0°	M. Saytzeff. A. C. P. 185, 129.
" "	"	.8644, 12°	
" "	"	.8478, 32°	Sorokin. A. C. P. 185, 169.
Diallylmethylcarbinol	$C_8 H_{14} O$	.8638, 0°	
" "	"	.8523, 13°	Smirensky. Ber. 14, 2688.
Diallylethylcarbinol	$C_9 H_{16} O$	.8776, 0°	
" "	"	.8637, 17°	P. and A. Saytzeff. Ber. 11, 1259.
Diallylpropylcarbinol	$C_{10} H_{18} O$	.8707, 0°	
" "	"	.8564, 20°	Rjabinin and Saytzeff. Ber. 12, 689.
Diallylisopropylcarbinol	"	.8647, 0°	
" "	"	.8512, 20°	
Vinyl ethyl oxide	$C_2 H_3. C_2 H_5. O$	.7625, 17° 5	Wislicenus. A. C. P. 192, 109.
Methyl allyl oxide	$C H_3. C_3 H_5. O$	.77, 11°	Henry. B. S. C. 18, 232.
Ethyl allyl oxide	$C_2 H_5. C_3 H_5. O$	.7651, 20°	Brühl. Bei. 4, 780.
Allyl oxide	$(C_3 H_5)_2 O$	.8223, 0°	
" "	"	.7217, 94° 3	Zander. A. C. P. 214, 181.
Methyl propargyl oxide	$C H_3. C_3 H_3. O$	.83, 12° 5	Henry. B. S. C. 18, 232.
" "	"		
Ethyl propargyl oxide	$C_2 H_5. C_3 H_3. O$	.8326, 20°	Brühl. Bei. 4, 780.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Amyl propargyl oxide	$C_5 H_{11} C_3 H_3 O$	.84, 12°	Henry. B. S. C. 18, 232.
Diallylearhyl methyl oxide	$C_7 H_{11} C H_3 O$	.8258, 0°	Rjabinin. Ber. 12, 2374.
“ “ “	“ “ “	.8096, 20°	
Diallylearhyl ethyl oxide	$C_7 H_{11} C_2 H_5 O$	.8218, 0°	“ “
“ “ “	“ “ “	.8023, 20°	
Isopropylallyldimethyl- earhyl methyl oxide.	$C_9 H_{17} C H_3 O$	.8027, 4°	Kononowitsch. Ber. 18, ref. 105.
Allyl formate	$C_4 H_6 O_2$	.9322, 17°.5	Tollens, Weber, and Kempf. J. 21, 450.
Allyl acetate	$C_5 H_8 O_2$	.8220, 103°	Schiff. G. C. I. 13, 177.
“ “	“	.9276, 20°	Brühl. Bei. 4, 780.
“ “	“	.9258, 24°.5	Gladstone. Bei. 9, 249.
Ethylvinyl acetate	$C_6 H_{10} O_2$	.896, 0°	Nevolé. J. C. S. 32, 868.
“ “	“	.892, 0°	Lieben. J. C. S. 32, 868.
Methylisocrotyl acetate	$C_8 H_{14} O_2$	.912	Wurtz. J. 17, 514.
Allyldimethylcarhyl acetate.	“	.9007, 0°	M. and A. Saytzeff. A. C. P. 185, 151.
“ “	“	.8832, 18°.5	
Allyldipropylcarhyl acetate.	$C_{12} H_{22} O_2$	.8903, 0°	Saytzeff. Ber. 11, 1939.
“ “	“	.8733, 21°	
Propargylacetate	$C_5 H_6 O_2$	1.0031, 12°	Henry. J. C. S. (2), 11, 1123.
“ “	“	1.0052, 20°	Brühl. Bei. 4, 780.
Diallylearhylacetate	$C_9 H_{14} O_2$	.9167, 0°	M. Saytzeff. A. C. P. 185, 129.
“ “	“	.8997, 17°.5	
Diallylmethylcarhyl acetate.	$C_{10} H_{16} O_2$	.8997, 0°	Sorokin. A. C. P. 185, 169.
“ “	“	.8733, 21°	
Allylacetic acid.	$C_5 H_8 O_2$	.98656, 12°	Perkin. J. C. S. 49, 205.
“ “	“	.98416, 15°	
“ “	“	.97670, 25°	
Ethylallylacetate	$C_7 H_{12} O_2$	.9229, 0°	Wurtz. J. 21, 446.
Allyloctylic acid	$C_{11} H_{20} O_2$	.91020, 25°	Perkin. J. C. S. 49, 205.
“ “	“	.89930, 45°	
Ethyl allyloctylate	$C_{13} H_{24} O_2$	.88271, 15°	“ “
“ “	“	.87658, 25°	
Diallylacetic acid	$C_8 H_{12} O_2$	.9495, 25°	Wolff. Ber. 10, 1957.
“ “	“	.9578, 13°	Reboul. J. C. S. 32, 594.
“ “	“	.95756, 12°	Perkin. J. C. S. 49, 205.
“ “	“	.95547, 15°	
“ “	“	.94913, 25°	
Ethyl methoxydiallylacetate.	$C_{11} H_{18} O_3$	.96066, 20°	Barataeff. J. P. C. (2), 35, 2.
Allyl acetacetate	$C_7 H_{10} O_3$	.99272, 15°	Perkin. J. P. C. (2), 32, 523.
“ “	“	.98542, 25°	
Ethyl allylacetacetate	$C_9 H_{14} O_3$	.9938, 13°.5	Gladstone. Bei. 9, 249.
“ “	“	.982, 20°	Zeidler. B. S. C. 23, 73.
Ethyl diallylacetacetate	$C_{12} H_{14} O_3$	.948, 25°	Wolff. Ber. 10, 1956.
Ethyl diallyloxyacetate	$C_{10} H_{15} O_3$	.9873, 0°	Saytzeff. Ber. 9, 77.
“ “	“	.9718, 18°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Allyl oxalate-----	$C_8 H_{10} O_4$ -----	1.055, 15°.5----	Hofmann and Ca- hours. J. 9, 585.
Ethylallylmalonate-----	$C_{10} H_{16} O_4$ -----	1.018, 16° ----	Conrad and Bischoff. Ber. 13, 595.
“ “ -----	“ -----	1.01475, 14° --	Gladstone. Bei. 9, 249.
“ “ -----	“ -----	1.01397, 15° }-----	Perkin. J. P. C. (2), 32, 523.
“ “ -----	“ -----	1.00620, 25° }-----	
Ethyl diallylmalonate-----	$C_{13} H_{20} O_4$ -----	.996, 14° -----	Conrad and Bischoff. Ber. 13, 595.
“ “ -----	“ -----	.99328, 20° ----	Matwejeff. Ber. 21, 181.
“ “ -----	“ -----	1.00620, 6°.5 }-----	Perkin. J. C. S. 49, 205.
“ “ -----	“ -----	.99940, 15° }-----	
“ “ -----	“ -----	.99252, 25° }-----	
Butallylmethylcarbin oxide.	$C_6 H_{12} O_2$ -----	1.0099, 21° ----	Kablukow. Ber. 21, ref. 54.
Butallylmethyl pinakone-----	$C_{12} H_{22} O_2$ -----	.9632, 0° ----	Kablukow. Ber. 21, ref. 55.
“ “ -----	“ -----	.9452, 24° ----	
Derivative of tetrabrom- diallylcarbin acetate.	$C_{13} H_{20} O_7$ -----	1.18013, 0° ----	Dieff. J. P. C. (2), 35, 20.

## 19th. Erythrite, Mannite, and the Carbohydrates.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Erythrite or erythrol-----	$C_4 H_6 (O H)_4$ -----	1.590 -----	Lamy. J. 5, 676.
“ “ -----	“ -----	1.449 }-----	Schröder. Ber. 12, 1561.
“ “ -----	“ -----	1.452 }-----	
Anhydride of erythrol-----	$C_4 H_6 O_2$ -----	1.1323, 0° ----	Przybytek. Ber. 17, 1091.
“ “ -----	“ -----	1.1132, 18° ----	
Mannite or mannitol-----	$C_6 H_8 (O H)_6$ -----	1.521 -----	Prunier. Ann. (5), 15, 22.
“ “ -----	“ -----	1.485 }-----	Schröder. Ber. 12, 1561.
“ “ -----	“ -----	1.486 }-----	
“ “ -----	“ -----	1.489 }-----	
Dulcitol or dulcitol-----	“ -----	1.466, 15° -----	Eichler. J. 9, 665.
Sorbite -----	$(C_6 H_{14} O_6)_2 \cdot H_2 O$ -----	1.654, 15° -----	Pelouze. J. 5, 655.
Pinite -----	$C_6 H_{12} O_5$ -----	1.520 -----	Berthelot. J. 8, 675.
Quercite -----	“ -----	1.5845 -----	Prunier. Bei. 2, 68.
Cane sugar, or saccharose-----	$C_{12} H_{22} O_{11}$ -----	1.606 -----	Brisson. P. des C.
“ “ “ -----	“ -----	1.600 -----	Schübler and Renz.
“ “ “ -----	“ -----	1.593 -----	Filhol.
“ “ “ -----	“ -----	1.596 -----	Plavfair and Joule. M. C. S. 2, 401.
“ “ “ -----	“ -----	1.5578 -----	Brix. J. 7, 618.
“ “ “ -----	“ -----	1.63 -----	Dubrunfaut.
“ “ “ -----	“ -----	1.5951, 15° ----	Maumené. B. S. C. 22, 33.
“ “ “ -----	“ -----	1.588, 4° -----	Schröder. Ber. 12, 561.
“ “ “ -----	“ -----	1.589 -----	W. C. Smith. Am. J. P. 53, 148.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Cane sugar, or saccharose	$C_{12}H_{22}O_{11}$	1.58046, 177.5	Gerlach.
" " " Fused, vitreous.	"	1.396, 117.5	Morin, J. Ph. C. (4), 28, 31.
" " " Molten	"	1.6	Quincke, P. A. 138, 141.
" " " "	"	1.5284	(Wiedemann and
" " " " Barley sugar.	"	1.5122	Ludewig, P. A. (2), 25, 151.
" " " "	"	1.5928	Zehnder, P. A. (2), 29, 260.
Milk sugar, or lactose	"	1.534	Filhol.
" " " "	"	1.53328, 4	Phaydur and Joule, J. C. S. 1, 138.
" " " "	"	1.525, 4 <sup>2</sup>	Schroder, Ber. 12, 561.
" " " "	"	1.533	W. C. Smith, Am. J. P. 53, 148.
Melezitose	$C_{12}H_{22}O_{11} \cdot H_2O$	1.549, 177.5	Alckline, J. C. S. 50, 681.
Glucose	$C_6H_{12}O_6 \cdot H_2O$	1.3861	Payen and Persoz.
" " " "	"	1.391	"
" " " "	"	1.51	Bolker, B. D. Z.
" " " "	"	1.57	"
" " Fused	"	1.3	Quincke, P. A. 138, 141.
Inosite, Anhydrous	$C_6H_{12}O_6$	1.752	Tauret and Villiers, Ann. (5), 23, 392.
" " " "	$C_6H_{12}O_6 \cdot 2H_2O$	1.1151, 5	Vohl, J. 11, 189.
" " " "	"	1.535, 8 <sup>2</sup>	Tauret and Villiers, C. R. 86, 486.
" " " "	"	1.524, 15	"
Bergenerite	$C_8H_{10}O_5 \cdot H_2O$	1.5445	Morelli, Ber. 14, 2694.
Starch	$(C_6H_{10}O_5)_n$	1.505	Payen.
" " " "	"	1.530	Dietrich, Z. A. C. 5, 51.
" " " "	"	1.56	Kepp, A. C. P. 35, 38.
" Arrowroot	"	1.5945, air dried	Fluckiger, Z. C. 10, 145.
" Potato	"	1.5029, "	
" " "	"	1.6330, dried at 100°.	
Dextrin	"	1.03843	O'Sullivan, J. 27, 830.
Inulin	"	1.470	Dragendorff, J. 22, 718.
" " " "	"	1.462	Dubrunfaut.
" " " "	"	1.3491	Kühn, A. C. P. 205, 151.
Cellulose	"	1.525	Weltzien's "Zusammenstellung."
Gum Arabic	"	1.387, air dried	Fluckiger, Z. C. 10, 145.
" " " "	"	1.525, dried at 100°.	
" " " "	"	1.355	
" " " "	"	1.384	
" " Tragacanth	"	1.384	Guérin-Varry, P. A. 29, 50.
" " Sengal	"	1.156	
" " Bassora	"	1.359	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Graminin -----	$6\text{ C}_6\text{ H}_{10}\text{ O}_5 \cdot \text{H}_2\text{ O}$ ---	1.522, 12° ---	Ekstrand and Johanson. Ber. 21, 594. Demole. Ber. 12, 1936. " "
Phlein -----	" ---	1.480 -----	
Octaceto-diglucose -----	$\text{C}_{12}\text{ H}_{14}(\text{C}_2\text{ H}_3\text{ O}_2)_8\text{ O}_{11}$ ---	1.27, 16° -----	
Octaceto-saccharose -----	" ---	1.27, 16° -----	" "

## 20th. Miscellaneous Non-Aromatic Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acetopropyl alcohol -----	$\text{C}_5\text{ H}_{10}\text{ O}_2$ -----	1.00514, 15° -----	Perkin, Jr. J. C. S. 51, 830. Lipp. Ber. 18, 3281.
" " -----	" -----	1.00197, 20° -----	
" " -----	" -----	.99896, 25° -----	
Acetobutyl alcohol -----	$\text{C}_6\text{ H}_{12}\text{ O}_2$ -----	1.0143, 0° -----	Perkin, Jr. J. C. S. 51, 719. Deutsch. Ber. 12, 115.
" " -----	" -----	.99771, 4° -----	
" " -----	" -----	.98947, 15° -----	
" " -----	" -----	.98270, 25° -----	Williamson. Deutsch. Ber. 12, 115.
Methyl orthoformate -----	$\text{C}_4\text{ H}_{10}\text{ O}_3$ -----	.974, 23° -----	
Ethyl orthoformate -----	$\text{C}_7\text{ H}_{16}\text{ O}_3$ -----	.8964 -----	
Propyl orthoformate -----	$\text{C}_{10}\text{ H}_{22}\text{ O}_3$ -----	.879, 23° -----	Lieben. J. 20, 546. Oeconomides. Ber. 14, 2581.
Isobutyl orthoformate -----	$\text{C}_{13}\text{ H}_{28}\text{ O}_3$ -----	.861 -----	
Isoamyl orthoformate -----	$\text{C}_{16}\text{ H}_{34}\text{ O}_3$ -----	.864 -----	
Diethoxy ether -----	$\text{C}_8\text{ H}_{18}\text{ O}_3$ -----	.8924, 21° -----	" " " "
Derivative of isobutylaldehyde.	$\text{C}_8\text{ H}_{14}\text{ O}$ -----	.9575, 0° -----	
" " -----	$\text{C}_{10}\text{ H}_{20}\text{ O}_2$ -----	.9415, 0° -----	
Derivative of valeral -----	$\text{C}_{10}\text{ H}_{18}\text{ O}$ -----	.9027, 17° -----	Borodin. J. 17, 339. Borodin. Ber. 5, 480.
" " -----	$\text{C}_{20}\text{ H}_{38}\text{ O}_3$ -----	.895 -----	
" " -----	" -----	.900 -----	
Derivative of oenanthol -----	$\text{C}_{28}\text{ H}_{50}\text{ O}$ -----	.8831, 15° -----	Perkin. Ber. 15, 2805.
" " -----	" -----	.8751, 30° -----	
" " -----	" -----	.8723, 35° -----	
"Acetyl valeryl" -----	$\text{C}_7\text{ H}_{12}\text{ O}_2$ -----	.8804, 15°.5 -----	Olewinisky. J. 14, 463.
Diacetone alcohol -----	$\text{C}_6\text{ H}_{12}\text{ O}_2$ -----	.9306, 25° -----	Heintz. A. C. P. 178, 349.
Methoxymethyl ethyl acetone.	$\text{C}_7\text{ H}_{14}\text{ O}_2$ -----	.855, 20° -----	James. J. C. S. 49, 50.
Dimethoxyl diethyl acetone.	$\text{C}_9\text{ H}_{18}\text{ O}_3$ -----	.886, 15° -----	" "
From diethylacetone -----	$\text{C}_{20}\text{ H}_{34}\text{ O}_2$ -----	.934, 12° -----	Geuther. J.P.C. (2), 6, 160.
Ethyl diacetone carbonate	$\text{C}_{10}\text{ H}_{18}\text{ O}_3$ -----	.9738, 20° -----	Frankland and Duppa. J. 18, 306.
Mesityl oxide -----	$\text{C}_6\text{ H}_{10}\text{ O}$ -----	.848, 23° -----	Fittig. J. 12, 344.
" " -----	" -----	.8528, 19° -----	Gladstone. Bei. 9, 249.
" " -----	" -----	.8578, 20° -----	Brühl. A. C. P. 235, 1.
Homologue of mesityl oxide.	$\text{C}_8\text{ H}_{14}\text{ O}$ -----	.8547, 15°.4 -----	Schramm. Ber. 16, 1581.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Phorone	$C_9H_{14}O$	.932 } 12°	Fittig. J. 12, 344.
"	"	.939 } 12°	
"	"	.9614, 20°	Schwanert. J. 15, 464.
"	"	.9645, 15°	Schulze. Ber. 15, 64.
"	"	.885, 20°	
"	"	.8793, 27°	
"	"	.8785, 28°	Brühl. A. C. P.
"	"	.8776, 29°	235, 1.
Aldol	$C_4H_8O_2$	1.1208, 0°	
"	"	1.1094, 16°	
"	"	1.0819, 49°.	Wurtz. B. S. C. 18, 426.
Derivative of aldol	$C_5H_{16}O_4$	1.0941	
"	"	1.0951 } 0°	Wurtz. C. R. 97, 1526.
"	"	1.0953 }	
Diacetate from the above compound.	$C_{12}H_{20}O_6$	1.095, 0°	" "
Derivative of laevulinic ether.	$C_{14}H_{22}O_7$	1.097, 15°	Conrad and Guthzeit. Ber. 17, 2286.
Diethyl glycollic ether	$C_{20}H_{36}O_{10}$	1.01, 19°	Geuther. J. 20, 455.
Propiopic acetic acid	$C_5H_8O_2$	.9922, 15°	Komnenos. A. C. P. 218, 167.
Acetyl trimethylene	$C_5H_8O$	.90471, 15°	
"	"	.90083, 20°	
"	"	.89706, 25°	Perkin, Jr. J. C. S. 51, 832.
Ethylacetyltrimethylene-carboxylate.	$C_8H_{12}O_3$	1.03436, 4°	
"	"	1.03256, 6°.5	
"	"	1.02549, 15°	Perkin, Jr. J. C. S. 47, 801.
"	"	1.01834, 25°	
"	"	1.0425, 25°.2	Gladstone. Ber. 19, 2563.
"	"	1.05174 } 15°	
"	"	1.05152 }	
"	"	1.04810, 20°	
"	"	1.04390, 25°	Two preparations.
"	"	1.04703 } 15°	Perkin, Jr. J. C. S. 51, 826.
"	"	1.04753 }	
"	"	1.03930, 25°	
Ethyl trimethylenedicarboxylate.	$C_9H_{14}O_4$	1.0708, 7°	Gladstone. J. C. S. 51, 852.
"	"	1.06455, 15°	
"	"	1.05657, 25°	Perkin. J. C. S. 51, 852.
"	"	1.06463, 15°	
"	"	1.05664, 25°	Perkin, Jr. J. C. S. 47, 801.
Ethyl trimethylenetricarboxylate.	$C_{12}H_{18}O_6$	1.127, 15°	Conrad and Guthzeit. Ber. 17, 1186.
Tetramethylenemonocarboxylic acid.	$C_5H_8O_2$	1.05480, 15°	
"	"	1.05116, 20°	
"	"	1.04761, 25°	Perkin. J. C. S. 51, 1.
Ethyl tetramethylenedicarboxylate.	$C_{10}H_{16}O_4$	1.0184, 14°	Gladstone. Bei. 9, 249.
"	"	1.05328, 9°	
"	"	1.01817, 15°	
"	"	1.01051, 25°	Perkin. J. C. S. 51, 1.
Ethyl acetyl-tetramethylenedicarboxylate.	$C_9H_{14}O_3$	1.0668, 13°	Gladstone. Bei. 9, 249.
Methylpentamethylenemonocarboxylic acid	$C_7H_{12}O_2$	1.02054, 15°	Two lots. Perkin.
"	"	1.01739, 20°	J. C. S. 53, 195
"	"	1.01438, 25°	and 199.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methylpentamethylene- monocarboxylic acid. }	$C_7 H_{12} O_2$ -----	1.0256, 4° -----	Two lots. Perkin. J. C. S. 53, 195 and 199.
“ “ -----	“ -----	1.0208, 10° -----	
“ “ -----	“ -----	1.0172, 15° -----	
“ “ -----	“ -----	1.0139, 20° -----	
“ “ -----	“ -----	1.0109, 25° -----	
Methylpentamethylene methyl ketone. }	$C_8 H_{14} O$ -----	.9222, 4° -----	Perkin. J. C. S. 53, 200.
“ “ -----	“ -----	.9174, 10° -----	
“ “ -----	“ -----	.9136, 15° -----	
“ “ -----	“ -----	.9100, 20° -----	
“ “ -----	“ -----	.9070, 25° -----	
Methylhexamethylene- monocarboxylic acid. }	$C_8 H_{14} O_2$ -----	1.0079, 4° -----	Perkin. J. C. S. 53, 209.
“ “ -----	“ -----	1.0033, 10° -----	
“ “ -----	“ -----	.99982, 15° -----	
“ “ -----	“ -----	.9966, 20° -----	
“ “ -----	“ -----	.9940, 25° -----	
Methyldehydrohexone -----	$C_6 H_{10} O$ -----	.92272, 4° -----	Perkin. J. C. S. 51, 719.
“ “ -----	“ -----	.91278, 15° -----	
“ “ -----	“ -----	.90502, 25° -----	
Ethyl methyldehydro- hexonecarboxylate. }	$C_9 H_{14} O_3$ -----	1.06457, 15° -----	Three lots. Perkin. J. C. S. 51, 711 and 713.
“ “ -----	“ -----	1.05840, 25° -----	
“ “ -----	“ -----	1.06840, 15° -----	
“ “ -----	“ -----	1.06470, 20° -----	
“ “ -----	“ -----	1.06137, 25° -----	
“ “ -----	“ -----	1.0744, 9° -----	
“ “ -----	“ -----	1.0696, 15° -----	
“ “ -----	“ -----	1.0660, 20° -----	
“ “ -----	“ -----	1.0626, 25° -----	
Ethyl methenyltricarbox- ylate. }	$C_{10} H_{16} O_6$ -----	1.10, 19° -----	Conrad. Ber. 12, 1236.
Ethyl ethenyltricarboxy- late. }	$C_{11} H_{18} O_6$ -----	1.089, 17° -----	Bischoff. A. C. P. 214, 39.
Methyl diethyl- $\beta$ -methyl- ethenyltricarboxylate. }	“ -----	1.079, 15° -----	Bischoff. A. C. P. 214, 56.
Ethyl $\beta$ -methylene- tricarboxylate. }	$C_{12} H_{20} O_6$ -----	1.092, 16° -----	Bischoff. Ber. 13, 2165.
Ethyl $\alpha$ $\beta$ -dimethylethe- nyltricarboxylate. }	$C_{13} H_{22} O_6$ -----	1.0745, 15° -----	Bischoff and Rach. A. C. P. 234, 54.
Ethyl butenyltricarboxy- late. }	“ -----	1.065, 17° -----	Polko. A. C. P. 242, 113.
Ethyl isobutenyltricar- boxylate. }	“ -----	1.064, 17° -----	Barnstein. A. C. P. 242, 126.
“ “ -----	“ -----	1.0805, 18° -----	Levy and Engländer. A. C. P. 242, 210.
Ethyl propylethenyltri- carboxylate. }	$C_{14} H_{24} O_6$ -----	1.052, 13° -----	Waltz. A. C. P. 214, 58.
Ethyl dicarboxylgluta- conate. }	$C_{15} H_{22} O_8$ -----	1.131, 15° -----	Conrad and Guth- zeit. Ber. 15, 2842.
Ethyl isoallylenetetra- carboxylate. }	$C_{15} H_{24} O_8$ -----	1.102, 15° -----	Bischoff. Ber. 13, 2164.
Ethyl dimethylacetylene- tetracarboxylate. }	$C_{16} H_{26} O_8$ -----	1.114, 15° -----	Bischoff and Rach. A. C. P. 234, 54.
Methylisopropenylcarbi- nol. “ -----	$C_5 H_{10} O$ -----	.8571, 0° -----	Kondakoff. Ber. 18, ref. 660.
“ “ -----	“ -----	.8419, 20°.5 -----	
Pyruvic acetate -----	$C_5 H_8 O_3$ -----	1.053, 11° -----	Henry. B. S. C. 19, 219.
Ethyl pyruvyl ether -----	$C_5 H_{10} O_2$ -----	.92, 18° -----	Henry. Ber. 14, 2272.

NAME	FORMULA	SP. GRAVITY	AUTHORITY
Parosorbic acid	$C_6 H_4 O_2$	1.068, 15	Hofmann, J. C. S. 12, 322.
Derivative of mannite	$C_6 H_4 O$	.9696, 0°	Fauconnier, J. C. S. 48, 743.
Methyl laureate	$C_{12} H_{24} O_2$	1.48 } 20°	Malaguti, Ann. (2) 63, 86.
"	"	1.50 } 20°	"
Ethyl laureate	$C_{14} H_{28} O_2$	1.47 } 20°	"
"	"	1.52 } 20°	"
Valerylene diacetate	$C_9 H_{16} O_4$	.963	Guthrie and Kolbe, J. 12, 365.
Conylene diacetate	$C_{12} H_{20} O_4$	.988, 18° 2	Wertheim, J. 16, 438.
Ameyl valerone	$C_{11} H_{20} O$	.856, 7°	Genther, Fröhlich, and Loos, Ber. 13, 1356.
Linoleic acid	$C_{18} H_{32} O_2$	.9206, 14°	Schuler, J. 10, 359.
Ricinoleic acid	$C_{18} H_{34} O_2$	.940, 15°	Saalmüller, J. 1, 562.
"	"	.9502, 15°	Norton and Richardson, A. C. J. 10, 57.
Distillate from linoleic acid	$C_{20} H_{36} O_2$	.9108, 15°	"
Distillate from ricinoleic acid	"	.912	"
Furfurane	$C_4 H_4 O$	.944, 0°	Henninger, Ann. (6), 7, 209.
"	"	.944, 15°	
Dihydrofurfurane	$C_4 H_6 O$	.9663 } 0°	
"	"	.9684 } 15°	"
"	"	.9503, 15°	"
Erythrol, (Crotonylene glycol)	$C_4 H_8 O_2$	1.06165, 0°	" "
"	"	1.0453, 20°	
Furfural	$C_5 H_4 O_2$	1.1638, 15° 6	Stenhouse, J. 1, 732.
"	"	1.1636, 13° 5	Stenhouse, J. 3, 513.
"	"	1.168, 15° 5	Fownes, P. T. 1845, 253.
"	"	1.131 } 15°	Volekel, J. 5, 652.
"	"	1.150 }	
"	"	1.1006, 27°	Stenhouse, P. M. (3), 18, 124.
"	"	.9610, 162°	Ramsay, J. C. S. 35, 463.
"	"	1.0025 } 160° 5	Schiff, G. C. I. 13, 177.
"	"	1.0026 } bp.	
"	"	1.1344, 19°	Gladstone, Ber. 9, 249.
"	"	1.1591, 20°	Brühl, A. C. P. 235, 1.
Ethylfurfurecarbinol	$C_7 H_{10} O_2$	1.093, 0°	Pawlinoff and Wagner, Ber. 17, 1967.
"	"	1.053, 15° 5	
Furfurbutylene	$C_7 H_{10} O$	.9509, 14° 5	Tönnies and Staub, Ber. 17, 852.
Fucosol	$C_7 H_8 O_2$	1.150, 13° 5	Stenhouse, J. 3, 513.
Ethyl pyromucate	$C_7 H_8 O_2$	1.297, 20°	Malaguti, J. P. C. 41, 224.
Triethylpropylphycite	$C_9 H_{20} O_4$	.976, 0°	Wolff, A. C. P. 150, 56.
"	"	.96051, 16° 5	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acid from petroleum ---	C <sub>11</sub> H <sub>20</sub> O <sub>2</sub> -----	.982, 0° ----	Hell and Medinger. Ber. 7, 1218.
“ “ “-----	-----	.969, 23° ----	
Ethyl ether of the above	C <sub>13</sub> H <sub>24</sub> O <sub>2</sub> -----	.939, 0° --	
“ “ “ acid.	-----	.919, 27° }--	“ “
From epichlorhydrin and chlorocarbonic ether.	C <sub>6</sub> H <sub>10</sub> O <sub>3</sub> -----	.9931, 21°.5	Kelly. Ber. 11, 2226.

## 21st. Phenols.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Phenol	$C_6H_5, O H$	1.062, 20°	Runge. P. A. 32, 308.
"	"	1.065, 18°	Laurent. Ann. (3), 3, 195.
"	"	1.0627	Scrugham. J. C. S. 7, 237.
"	"	1.0808, 0°, 1. }	Kopp. A. C. P. 95, 307.
"	"	1.0597, 32°.9 }	
"	"	1.0554	Duclos. A. C. P. 109, 135.
"	"	1.068	Church. J. C. S. 16, 76.
"	"	1.0667, 38°	Graebe.
"	"	1.0709, 38°	Zotta. A. C. P. 174, 87.
"	"	1.066, cryst.	Hamberg. Ber. 4, 751.
"	"	1.05433, 40°	Adrieenz. Ber. 6, 443.
"	"	1.04663, 50°	
"	"	1.03804, 60°	
"	"	1.02890, 70°	
"	"	1.01950, 80°	
"	"	1.01015, 90°	From four differ- ent sources. La- denburg. Ber. 7, 1687.
"	"	1.00116, 100°	
"	"	1.0558, 46°	
"	"	1.0463, 56°	
"	"	1.0567, 46°	
"	"	1.0470, 56°	Ramsay. J. C. S. 35, 463.
"	"	1.0560, 46°	
"	"	1.0467, 56°	
"	"	1.0559, 46°	
"	"	1.0476, 56°	
"	"	.8789, 186°	{ Bedson and Wil- liams. Ber. 14, 2551.
"	"	1.0591, 40°	
"	"	1.0545, 45°	Landolt. P. A. 122, 558.
"	"	1.0722, 20°	
"	"	1.0702, 20°	Brühl. Bei. 4, 782.
"	"	1.05810, 4°	Flink. Bei. 8, 262.
"	"	1.0598, 21°	Gladstone. Bei. 9, 249.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Phenol	$C_6H_5.OH$	1.0906, 0°, 1.	Pinette. A. C. P. 243, 32.
"	"	1.0387, 15°, 5	
"	"	.9217, 182°, 9	
Diphenol. Pyrocatechin	$C_6H_4.(OH)_2$	1.340 } 4°	Schröder. Ber. 12, 561.
"	"	1.348 }	
"	"	1.2728, 0°	
"	Resorcin	"	Calderon. J. R. C. 5 313.
"	"	"	
"	"	1.2717, 15°	
"	"	"	Schröder. Ber. 12, 561.
"	"	"	
"	"	1.289 }	
"	"	1.1755, 100°, 2	Schiff. A. C. P. 223, 247.
"	Hydroquinone	"	Schröder. Ber. 12, 561.
"	"	1.324 }	
"	"	1.328 }	
Triphenol. Pyrogallol	$C_6H_3.(OH)_3$	1.443 } 4°	" "
"	"	1.463 }	
"	"	"	
Orthokresol	$C_6H_4.CH_3.OH$	1.039, 23°	Gladstone. Bei. 9, 249.
"	"	1.0578, 0°, 1.	Pinette. A. C. P. 243, 32.
"	"	1.0053, 65°, 6	
"	"	.8867, 190°, 8	
Metakresol	"	1.0330, 19°	Gladstone. Bei. 9, 249.
"	"	1.0498, 0°	Pinette. A. C. P. 243, 32.
"	"	.8744, 202°, 8	
"	"	1.033, 23°	
Parakresol. ?	"	1.0522, 0°, 1.	v. Rad. J. 22, 448.
"	"	.9962, 65°, 6	
"	"	.8728, 201°, 8	
Ethylphenol	$C_6H_4.C_2H_5.OH$	1.049, 14°	Auer. Ber. 17, 669.
Orthopropylphenol	$C_6H_4.C_3H_7.OH$	1.015, 0°	Spica. Ber. 12, 295.
"	"	.9370, 100°	
"	"	1.0091, 0°	
Parapropylphenol	"	.9324, 100°	" "
"	"	"	
"	"	"	
Orthoisopropylphenol	"	1.0143, 0°	Fileti. G. C. I. 16, 113.
"	"	.92765, 100°	
"	"	"	
Xylenol. 1,3,4	$C_6H_3.CH_3.CH_3.OH$	1.036, 0°	Wurtz. J. 21, 460.
"	"	.9700, 81°	
"	"	1.0362, 0°	
"	"	1.0233, 23°	Jacobsen. Ber. 11, 24.
"	"	"	Wroblevsky. J. 21, 459.
"	"	.9709, 81°	Wurtz. J. 21, 460.
"	"	1.0366, 0°	
"	"	1.0242, 15°, 5	
"	"	1.0129, 30°	Lako. J. 1876, 454.
"	"	1.0020, 45°	
"	"	.9903, 59°	
"	"	.9673, 100°	Hasiwet. J. 10, 329.
"	"	1.0374, 12°	
Phlorctol	$C_6H_{10}O$	1.00122, 0°	Spica. J. C. S. 44, 460.
Isopropylkresol	$C_6H_5.C_3H_7.CH_3.OH$	.91971, 100°	
"	"	.98558, 15°	
Propylkresol. Carvacrol	"	"	Jacobsen. Ber. 11, 1050.
"	"	.981, 15°	Jahns. Ber. 15, 817.
"	Thymol	1.0285, s.	Stenhouse. J. 9, 624.
"	"	1.01068, 0°	Two preparations. Pisati and Pater- no. Ber. 8, 71.
"	"	1.009136, 0°	
"	"	.92424, 100°	

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY.
Propylkresol. Thymol	$C_6H_5 \cdot C_3H_7 \cdot CH_3 \cdot OH$	1.069	Rüchdorff. Ber. 12, 252.
"	"	1.0101, 4°	Schiff. Ber. 13, 1408.
"	"	.939, 25° .5	Haines. J. 9, 623.
"	"	.988, 0°	Febve. Ber. 14, 1720.
"	"	1.029	Schröder. Ber. 14,
"	"	1.034	2516.
"	"	.96895, 24° .4	Nasini and Bernhei-
"	"	.92838, 77° .3	mer. G. C. I. 15, 50.
"	"	.9499, 49° .3	Schiff. A. C. P. 223,
"	"	"	247.
"	"	.9941, 0°, 1.	Pinette. A. C. P.
"	"	.9401, 16° .5	
"	"	.7923, 231° .8	
Orthobutenylphenol	$C_6H_4 \cdot C_4H_7 \cdot OH$	1.0171	Perkin. C. N. 39, 39.
Guaiacol. 1.2	$C_6H_4 \cdot O \cdot C \cdot H_3 \cdot OH$	1.1171, 13°	Hlasiwetz. A. C. P.
"	"	1.119, 22°	106, 366.
"	"	1.125, 16°	Sobrero.
"	"	1.119, 17° .5	Völkcl. J. 7, 610.
Kreosol. 1.3.4	$C_6H_5 \cdot OCH_3 \cdot CH_3 \cdot OH$	1.0894, 13°	Gorup-Besanez.
Orcin	$C_6H_3 \cdot CH_3 \cdot (OH)_2 \cdot H_2O$	1.283	Hlasiwetz. A. C. P.
"	"	1.296	106, 354.
		4°	Schröder. Ber. 12,
			1611.

## 22d. Aromatic Alcohols.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Benzyl alcohol	$C_6H_5 \cdot C \cdot H_2 \cdot OH$	1.059	Cannizzaro. J. 7,
"	"	1.0628, 0°	585.
"	"	1.0507, 15° .4	Kopp. A. C. P. 94,
"	"	1.0465, 19°	257.
"	"	1.0429, 20°	Kraut. A. C. P.
"	"	1.0412, 22°	152, 134.
Benzylcarbinol	$C_6H_5 \cdot CH_2 \cdot CH_2 \cdot OH$	1.0337, 21°	Brühl. Bei. 4, 781.
Phenylpropyl alcohol	$C_6H_5 \cdot C \cdot H_2 \cdot C \cdot H_2 \cdot C \cdot H_2 \cdot OH$	1.008, 18°	Gladstone. Bei. 9,
"	"	1.0079, 20°	249.
Orthoxylyl alcohol	$C_6H_4 \cdot CH_3 \cdot CH_2 \cdot OH$	1.08, s.	Radziszewski. Ber.
Metaxylyl alcohol	"	1.023, 40°, 1.	9, 373.
"	"	.9157, 17°	Rügheimer. A. C.
"	"	1.036, 0°	P. 172, 126.
Ethylphenylcarbinol	$C_6H_4 \cdot CHOH \cdot CH_3$	1.016, 0°	Brühl. Bei. 4, 781.
"	$C \cdot H_3$	.994, 23°	Colson. Ann. (6),
Cymyl alcohol. 1.4	$C_6H_4 \cdot C_3H_7 \cdot CH_2 \cdot OH$	.9775, 15°	6, 86.
			Radziszewski and
			Wispek. Ber. 15,
			1747.
			Colson. Ann. (6),
			6, 86.
			Wagner. Ber. 17,
			ref. 317.
			Kraut. A. C. P.
			192, 224.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Saligenin -----	$C_6H_4 \cdot OH \cdot CH_2OH$	1.1613, 25°	Beilstein and Seelheim, J. 14, 765.
Methylsaligenin, 1.2 -----	$C_6H_4 \cdot OCH_3 \cdot CH_2OH$	1.1200, 23°	{ Cannizzaro and Koerner, B. S. C. 18, 132.
" " -----	"	1.0532, 100°	
Anisic alcohol, 1.4 -----	"	1.1093, 26°	
" " -----	"	1.0507, 100°	" "
Acetophenone alcohol -----	$C_8H_8O_2$	1.013	Emmerling and Engler, Ber. 6, 1006.
Cinnamic alcohol -----	$C_9H_{10}O$	1.0402, 24° 8'	Nasini, Bei. 9, 331.
" " -----	"	1.04017, 24° 8'	{ Nasini and Bernheimer, G. C. I. 15, 50.
" " -----	"	1.03024, 36° 1'	
" " -----	"	1.0027, 77° 3'	
" " -----	"	1.0318, 13°	Gladstone, Bei. 9, 249.
" " -----	"	1.0440, 20°	{ Brühl, A. C. P. 235, 1.
" " -----	"	1.0351, 31°	
" " -----	"	1.0346, 32°	
" " -----	"	1.0338, 33°	
Ethylphenylacetylene alcohol -----	$C_{10}H_{12}O$	0.85, 19°	Morgan, J. C. S. (3), 1, 163.
Orthoxylenylene glycol -----	$C_6H_4(C_2H_4O)_2$	1.138, 75°	Colson, Ann. (6), 6, 86.
Metaxylenylene glycol -----	"	1.161, 18°, super-fused.	{ " "
" " -----	"	1.135, 53°	
Paraxylenylene glycol -----	"	1.094, 13.5°	
Mesitylenylene glycol -----	$C_6H_3 \cdot CH_3 \cdot (CH_2OH)_2$	1.23, 15°	Robinet and Colson, C. R. 96, 1863.

## 23d. Aromatic Oxides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Phenyl ether -----	$C_6H_5 \cdot O \cdot C_6H_5$	1.0504	Gladstone and Tribe, J. C. S. 41, 6.
" " -----	"	1.0744, 24°	{ Gladstone, Bei. 9, 249.
" " -----	"	1.0712, 25°	
Phenylmethyloxyde, Anisole, " " " " -----	$C_6H_5 \cdot O \cdot CH_3$	0.91, 15°	Cahours, J. 2, 403.
" " " " -----	"	0.8607	{ (Schiff, G. C. I. 13, 177.
" " " " -----	"	0.8608	
" " " " -----	"	0.98784, 21° 8'	
" " " " -----	"	1.0110, 0°	{ Pinette, A. C. P. 243, 32.
" " " " -----	"	0.8604, 154° 3'	
Phenylethyloxyde, Phenetol, " " " " -----	$C_6H_5 \cdot O \cdot C_2H_5$	0.8196	{ (Schiff, G. C. I. 13, 177.
" " " " -----	"	0.8198	
" " " " -----	"	0.973, 15°	Remsen and Orndorff, A. C. J. 9, 393.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Phenylethyloxyde. Phencol. " " " "	$C_6 H_5, O. C_2 H_5$ -----	.9822, 0° --- } .8169, 170°.3 }	Pinette. A.C.P. 243, 32.
Phenyl propyl oxide-----	$C_6 H_5, O. C_3 H_7$ -----	.968, 20° ---	Cahours. Les Mondes, 32, 280.
" " " "-----	"-----	.9639, 0° --- } .7889, 190°.5 }	Pinette. A.C.P. 243, 32.
Phenyl isopropyl oxide --	"-----	.958, 0° --- } .947, 12°.5 }	Silva. Z. C. 13, 250.
Phenyl butyl oxide-----	$C_6 H_5, O. C_4 H_9$ -----	.9500, 0° --- } .7664, 210°.3 }	Pinette. A.C.P. 243, 32.
Phenyl isobutyl oxide-----	"-----	.9388, 16° ---	Riess. J. C. S. 24, 221.
Phenyl n. heptyl oxide---	$C_6 H_5, O. C_7 H_{15}$ -----	.9319, 0° --- } .7075, 266°.8 }	Pinette. A.C.P. 243, 32.
Phenyl n. octyl oxide----	$C_6 H_5, O. C_8 H_{17}$ -----	.9221, 0° --- } .6941, 282°.8 }	" "
Benzyl ether-----	$C_7 H_7, O. C_7 H_7$ -----	1.0359, 16° ---	Lowe. J. C. S. 51, 701.
Kresyl ether-----	"-----	1.0352, 16° ---	Gladstone. Bei. 9, 249.
Orthokresyl methyl oxide.	$C_7 H_7, O. C H_3$ -----	.9957, 0° --- } .8331, 171°.3 }	Pinette. A. C. P. 243, 32.
Metakresyl methyl oxide.	"-----	.9891, 0° --- } .8255, 177°.2 }	" "
Parakresyl methyl oxide.	"-----	.8236, 175°.5 } .9868, 0° --- }	Schiff. Bei. 9, 559.
" " " "-----	"-----	.8241, 175° ---	Pinette. A. C. P. 243, 32.
Orthokresyl ethyl oxide---	$C_7 H_7, O. C_2 H_5$ -----	.9679, 0° --- } .7941, 184°.8 }	" "
Metakresyl ethyl oxide---	"-----	.97123, 5° ---	Staedel. Ber. 14, 898.
" " " "-----	"-----	.9650, 0° --- } .7888, 192° --- }	Pinette. A. C. P. 243, 32.
Parakresyl ethyl oxide---	"-----	.8744, 0° --- } .9662, 0° --- }	Fuchs. J. 22, 457.
" " " "-----	"-----	.7884, 189°.9	Pinette. A. C. P. 243, 32.
Orthokresyl propyl oxide---	$C_7 H_7, O. C_3 H_7$ -----	.9517, 0° --- } .7675, 204°.1 }	" "
Metakresyl propyl oxide---	"-----	.9484, 0° --- } .7628, 210°.6 }	" "
Parakresyl propyl oxide---	"-----	.9497, 0° --- } .7635, 210°.4 }	" "
Orthokresyl butyl oxide---	$C_7 H_7, O. C_4 H_9$ -----	.9437, 0° --- } .7493, 223° --- }	" "
Metakresyl butyl oxide---	"-----	.9407, 0° --- } .7422, 229°.2 }	" "
Parakresyl butyl oxide---	"-----	.9419, 0° --- } .7410, 229°.5 }	" "
Orthokresyl n. heptyloxyde	$C_7 H_7, O. C_7 H_{15}$ -----	.9243, 0° --- } .7016, 277°.5 }	" "
Metakresyl n. heptyloxyde	"-----	.9202, 0° --- } .6927, 283°.2 }	" "
Parakresyl n. heptyl oxide	"-----	.9228, 0° --- } .6905, 283°.3 }	" "
Orthokresyl n. octyl oxide	$C_7 H_7, O. C_8 H_{17}$ -----	.9231, 0° --- } .6905, 292°.9 }	" "
Metakresyl n. octyl oxide	"-----	.9194, 0° --- } .6818, 298°.9 }	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Parakresyl n. octyl oxide	$C_7H_7 \cdot O \cdot C_8H_{17}$	.9199, 0°	Pinette. A. C. P.
" " "	"	.9808, 298°	243, 32.
Ethyl phenetol	$C_6H_4 \cdot C_2H_5 \cdot O \cdot C_2H_5$	.986, 11°	Auer. Ber. 17, 669.
Phloryl ethyl oxide	$C_8H_9 \cdot O \cdot C_2H_5$	.9323, 18°	Sigel. A. C. P. 179, 345.
Styryl ethyl oxide	"	.931, 21°.	Thorpe. J. 22, 412.
Orthopropylphenyl methyl oxide.	$C_6H_4 \cdot C_3H_7 \cdot O \cdot CH_3$	.9394, 0°	Spica. Ber. 12, 295.
" " "	"	.9168, 100°	" "
Paropropylphenyl methyl oxide.	"	.9636, 0°	" "
" " "	"	.9125, 100°	" "
Isopropylphenyl methyl oxide.	"	.962, 0°	Paterno and Spica. Ber. 10, 84.
Isopropylphenyl ethyl oxide.	$C_6H_4 \cdot C_3H_7 \cdot O \cdot C_2H_5$	.94377, 0°	Spica. J. C. S. 38, 167.
" " "	"	.86369, 100°	"
Orthoisopropylphenyl ethyl oxide.	"	.94438, 0°	Filati. G. C. I. 16, 113.
" " "	"	.85913, 100°	"
Butyl anisol	$C_6H_4 \cdot C_4H_9 \cdot O \cdot CH_3$	.9368, 27°	Studer. Ber. 14, 2187.
Methyl thymol	$C_{10}H_{11} \cdot O \cdot C \cdot H_3$	.941, 18°	Engelhardt and Latschinoff. J. 22, 466.
" " "	"	.953898, 0°	Two samples. Pinette and Paterno. Ber. 8, 71.
" " "	"	.869281, 100°	
" " "	"	.954314, 0°	
" " "	"	.870459, 100°	
" " "	"	.9531, 0°	Pinette. A. C. P.
" " "	"	.7635, 216°.	243, 32.
Ethyl thymol	$C_{10}H_{11} \cdot O \cdot C_2H_5$	.93866, 0°	Spica. J. C. S. 44, 460.
" " "	"	.85758, 100°	"
" " "	"	.9334, 0°	Pinette. A. C. P.
" " "	"	.7400, 226°.	243, 32.
Propyl thymol	$C_{10}H_{11} \cdot O \cdot C_3H_7$	.9276, 0°	" "
" " "	"	.7215, 243°	" "
Butyl thymol	$C_{10}H_{11} \cdot O \cdot C_4H_9$	.9230, 0°	" "
" " "	"	.7108, 258°.	" "
Normal heptyl thymol	$C_{10}H_{11} \cdot O \cdot C_7H_{15}$	.9097, 0°	" "
" " "	"	.6712, 306°.	" "
Normal octyl thymol	$C_{10}H_{11} \cdot O \cdot C_8H_{17}$	.9026, 0°	" "
" " "	"	.6608, 319°.	" "
Metaxylyl ethyl oxide	$C_6H_4 \cdot C_6H_5 \cdot C \cdot H_2 \cdot O \cdot C_2H_5$	.9302, 17°	Radziszewski and Wispek. Ber. 15, 1746.
Paraxylyl ethyl oxide	"	.9304, 17°	Radziszewski and Wispek. Ber. 15, 1745.
Diphenylcarbyl ethyl oxide.	$(C_6H_5)_2CH \cdot O \cdot C_2H_5$	1.029, 20°	Linnemann.
Benzyl anisol	$C_6H_4 \cdot C_7H_7 \cdot O \cdot CH_3$	1.073, 0°	Paterno. B. S. C. 18, 77.
" " "	"	.993, 100°	"
Phenylvinyl ethyl oxide	$C_{10}H_{12} \cdot O$	.9812, 0°	Erlenmeyer. Ber. 14, 1868.
Orthovinylanisol	$C_6H_4 \cdot C_2H_3 \cdot O \cdot CH_3$	1.0095, 15°	Perkin. J. C. S. 23, 211.
" " "	"	1.000, 30°	"
Paravinylanisol	"	1.002, 15°	" "
" " "	"	.9956, 30°	" "
Orthoallylanisol	$C_6H_4 \cdot C_3H_5 \cdot O \cdot CH_3$	.9972, 15°	" "
" " "	"	.9884, 30°	" "
" " "	"	.9793, 45°	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Anethol. 1.4-----	$C_6H_4, C_3H_5, O, CH_3$ ----	.984, 20°-----	Landolph. C. R. 82, 227.
“ Natural.-----	“-----	.9858, 30°-----	} Perkin.
“ Artificial-----	“-----	.9852, 30°-----	
“ “-----	“-----	.9761, 45°-----	
“-----	“-----	.9887, 21° 3'-----	Schiff. A. C. P. 223, 247.
“-----	“-----	.99132, 14° 9'-----	} Nasini and Bernheimer. G.C.I. 15, 50.
“-----	“-----	.98556, 21° 6'-----	
“-----	“-----	.97595, 34° 4'-----	
“-----	“-----	.94041, 77° 3'-----	} Gladstone. J.C.S. 49, 623.
“-----	“-----	.9869, 21°-----	
“ Artificial-----	“-----	.9870, 21°-----	
Orthobutenylanisöl-----	$C_6H_4, C_4H_7, O, CH_3$ ----	.9817, 15°-----	} Perkin. J. C. S. 33, 211.
“-----	“-----	.9740, 30°-----	
Parabutenylanisöl-----	“-----	.9733, 30°-----	“ “
Phenyl allyl oxide-----	$C_6H_5, O, C_3H_5$ -----	.9825, 17° 6'-----	Nasini. Bei. 9, 331.
Kresyl allyl oxide. 1.4-----	$C_7H_7, O, C_3H_5$ -----	.9869, 10°-----	“ “
Phenyl propargyl oxide-----	$C_6H_5, O, C_3H_3$ -----	1.246, 0°-----	Henry. Ber. 16, 1378.
Veratrol. 1.2-----	$C_6H_4 (O C H_3)_2$ ----	1.086, 15°-----	Merek. J. 11, 256.
Dimethylresorcin. 1.3-----	“-----	1.075, 0°-----	Coninek. Ber. 13, 1992.
“-----	“-----	1.0803, 0°-----	} Schiff. Ber. 19, 560.
“-----	“-----	1.0317, 55° 8'-----	
“-----	“-----	1.0104, 79° 2'-----	
“-----	“-----	.9566, 135° 5'-----	
“-----	“-----	.8752, 215°-----	
Methylene diphenate-----	$C H_2 (O C_6 H_5)_2$ ----	1.1136, 18°-----	Henry. Ann. (5), 30, 269.
“ “-----	“-----	1.092, 20°-----	Arnhold. A. C. P. 240, 192.
Methylene diorthokresylate.	$C H_2 (O C_7 H_7)_2$ ----	1.019, 50°, 1.-----	“ “
Methylene dimetakresylate.	“-----	1.052, 50°, 1.-----	“ “
Methylene diparakresylate	“-----	1.034, 50°, 1.-----	“ “
Methylene dibenzylate-----	“-----	1.053, 20°-----	“ “
Methylene dithymylate-----	$C H_2 (O C_{10} H_{13})_2$ ----	.979, 50°, 1.-----	“ “
Ethylene diphenate-----	$C_2 H_4 (O C_6 H_5)_2$ ----	1.018, 11°-----	Henry. Ber. 16, 1378.

## 24th. Aromatic Acids and their Paraffin Ethers.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Benzoic acid	$C_6H_5 \cdot COOH$	1.29, cryst. ---	Kopp.
" "	"	1.261, 21°, 8, ---	Mendelejeff, J. 11, 271.
" "	"	1.206, 25°, 8, 1.	
" "	"	1.227, 27°, 1.	
" "	"	1.0838, 121°/4	Kopp. J. 8, 35.
" "	"	1.337, sublimed	Rudorff, Ber. 12, 251.
" "	"	1.288	Schröder, Ber. 12, 561.
" "	"	1.291, 4° ---	
" "	"	1.297	
" "	"	1.0800, 121°/4	Schiff, A. C. P. 223, 247.
Methyl benzoate	$C_8H_8O_2$	1.10, 17°	Dumas and Peligot, Ann. (2), 58, 50.
" "	"	1.1026, 0° ---	Kopp. A. C. P. 94, 257.
" "	"	1.0876, 16°, 3	
" "	"	1.0921, 12°, 3	Mendelejeff, J. 13, 7.
" "	"	1.0862, 20°	Bühl, Bei. 4, 782.
" "	"	1.100, 10°	De Heen, Bei. 10, 313.
" "	"	1.103, 15°	Stohmann, Rodatz, and Herzberg, J. P. C. (2), 36, 1.
Ethyl benzoate	$C_9H_{10}O_2$	1.0539, 10°, 5.	Dumas and Boullay, P. A. 12, 430.
" "	"	1.06, 18°	Deville, Ann. (3), 3, 188.
" "	"	1.049, 14°	Delfs, J. 7, 26.
" "	"	1.0657, 0° ---	Kopp. A. C. P. 94, 257.
" "	"	1.0556, 10°, 5	
" "	"	1.0517, 14°, 1	Mendelejeff, J. 13, 7.
" "	"	1.018, 20°	Naumann, Ber. 10, 2016.
" "	"	1.0473, 20°	Bühl, Bei. 4, 782.
" "	"	1.0502, 16°	Linnemann, A. C. P. 160, 195.
" "	"	1.160, 10°	De Heen, Bei. 10, 313.
" "	"	1.050, 15°	Stohmann, Rodatz, and Herzberg, J. P. C. (2), 36, 1.
Propyl benzoate	$C_{10}H_{12}O_2$	1.0316, 16°	Linnemann, A. C. P. 161, 20.
" "	"	1.0218, 15°	Stohmann, Rodatz, and Herzberg, J. P. C. (2), 36, 1.
Isopropyl benzoate	"	1.054, 0° ---	Silva, Z. C. 12, 637.
" "	"	1.013, 25°	
Butyl benzoate	$C_{11}H_{14}O_2$	1.000, 20°	Linnemann, Ann. 43, 27, 268.
" "	"	1.002, 10°	De Heen, Bei. 10, 313.
Isobutyl benzoate	"	1.0018, 15°	Stohmann, Rodatz, and Herzberg, J. P. C. (2), 36, 1.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Amyl benzoate-----	$C_{12}H_{16}O_2$ -----	1.0039, 0° ---	Kopp. A. C. P. 94, 257. De Heen. Bei. 10, 313. Stohmann, Rodatz, and Herzberg. J. P. C. (2), 36, 1. Frentzel. Ber. 16, 745.
" "-----	"-----	.9925, 14°.4 } 1.002, 10°-----	
" "-----	"-----	.9916, 15°-----	
Hexyl benzoate-----	$C_{13}H_{18}O_2$ -----	.99846, 17°-----	
Salicylic acid-----	$C_6H_4.OH.CO.OH$ . 1.2	1.443-----	Rüdorff. Ber. 12, 251.
" "-----	"-----	1.482 } 4°-----	Schröder. Ber. 12, 1611. " " " " " "
" "-----	"-----	1.485 } 1.473, 4°-----	
Metaoxybenzoic acid-----	" 1.3	1.460 } 4°-----	
Paraoxybenzoic acid-----	" 1.4	1.476 } 1.476 } 4°-----	
Methyl salicylate, oil of Betula lenta.	$C_8H_8O_3$ -----	1.180, 15°-----	Pettigrew. Am. J. P. 55, 385.
Propyl salicylate-----	$C_{10}H_{12}O_3$ -----	1.021, 21°-----	Cahours. Les Mon- des, 32, 280.
Methylsalicylic acid. 1.2--	$C_6H_4.OCH_3.CO.OH$	1.18, 10°-----	Cahours. Ann. (3), 10, 327.
" "-----	"-----	1.1845, 15°-----	Mendeleeff. J. 13, 7.
" "-----	"-----	1.1969, 0°-----	Kopp. A. C. P. 94, 257. Landolt. Bei. 7, 847 Schröder. Ber. 12, 1611.
" "-----	"-----	1.1819, 16°-----	
" "-----	"-----	1.1801, 20°-----	
" "-----	"-----	1.364 } 4°-----	
Anisic acid. 1.4-----	"-----	1.376 } 1.385 } 4°-----	Baly. J. C. S. 2, 28. Delifs. J. 7, 26. Göttig. Ber. 9, 1473. Heintz. A. C. P. 153, 332. Kraut. J. 22, 566. Schröder. Ber. 12, 1611. " " " "
" "-----	"-----	1.364 } 1.376 } 4°-----	
" "-----	"-----	1.385 } 1.097-----	
Ethylsalicylic acid. 1.2--	$C_6H_4.OC_2H_5.CO.OH$	1.1843, 10°-----	
" "-----	"-----	1.1005-----	Heintz. A. C. P. 153, 332. Kraut. J. 22, 566. Schröder. Ber. 12, 1611. " " " "
Ethyl ethylsalicylate-----	$C_{11}H_{14}O_3$ -----	1.0875, 0°-----	
Ethyl ethylmetaoxyben- zoate. "-----	"-----	1.0725, 20°-----	
Methyl isopropylsalicylate	"-----	1.062, 20°-----	
Protocatechuic acid-----	$C_6H_3(OH)_2.CO.OH$	1.541 } 4°-----	Schröder. Ber. 12, 1611. " " " " " "
" "-----	"-----	1.542 } 1.685 } 4°-----	
Galic acid-----	$C_6H_2(OH)_3.CO.OH$	1.703 } 4°-----	
" "-----	"-----	1.703 } 1.3. solid-----	
Phenylacetic, or alpha- toluic acid. "-----	$C_6H_5.CH_2.CO.OH$	1.0778, 83°-----	Möller and Strecker. J. 12, 299. Schröder. Ber. 12, 1611. Schiff. A. C. P. 223, 247. Radziszewski. Z. C. 12, 358. " " Hodgkinson. J. C. S. 37, 483. Weger. A. C. P. 221, 61. Erlenmeyer. J. 19, 366. Weger. A. C. P. 221, 61.
" "-----	"-----	1.0334, 135°-----	
" "-----	"-----	1.220 } 4°-----	
" "-----	"-----	1.236 } 1.0847, 76°.4-----	
Methyl phenylacetate-----	$C_9H_{10}O_2$ -----	1.044, 16°-----	Radziszewski. Z. C. 12, 358. " " Hodgkinson. J. C. S. 37, 483. Weger. A. C. P. 221, 61. Erlenmeyer. J. 19, 366. Weger. A. C. P. 221, 61.
Ethyl phenylacetate-----	$C_{10}H_{12}O_2$ -----	1.031-----	
Propyl phenylacetate-----	$C_{11}H_{14}O_2$ -----	1.0142, 18°-----	
Phenylpropionic, or hy- drocinnamic acid.	$C_6H_5.C_2H_4.CO.OH$	1.07115, 48°.7 .8780, 279°.8-----	
Methyl phenylpropionate	$C_{10}H_{12}O_2$ -----	1.0455, 0°-----	Erlenmeyer. J. 19, 366. Weger. A. C. P. 221, 61.
" "-----	"-----	1.018, 49°-----	
" "-----	"-----	1.0473, 0°-----	
" "-----	"-----	.83824, 236°.6-----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl phenylpropionate	$C_{11}H_{14}O_2$	1.0313, 6°	Erlenmeyer. J. 19,
" "	"	.9925, 49°	367.
" "	"	1.0147, 20	Bruhl. Bei. 4, 781.
" "	"	1.0318, 6°	Weger. A. C. P.
" "	"	.80182, 248°	221, 61.
Propyl phenylpropionate	$C_{12}H_{16}O_2$	1.0152, 6°	" "
" "	"	.77886, 262°	" "
Amyl phenylpropionate	$C_{14}H_{20}O_2$	.9807, 0°	Erlenmeyer. J. 19,
" "	"	.9520, 49°	367.
Methyl oxyphenylacetate	$C_9H_{10}O_3$	1.15, 17°	Fritzsche. Ber. 12,
" "	"	1.17°	2178.
Ethyl oxyphenylacetate	$C_{10}H_{12}O_3$	1.104, 17°	" "
Ethyl oxyphenylpropionate	$C_{11}H_{14}O_3$	1.360, 17°	Saebach. J. P. C.
" "	"	(2), 21, 156.	
Phthalic acid	$C_6H_4(COOH)_2$	1.585	Schroder. Ber. 13,
" "	"	1.593	1070.
Methyl phthalate	$C_{10}H_{10}O_4$	1.2001	
" "	"	1.2022	132°
" "	"	1.2101	
" "	"	1.1958	
" "	"	1.1974	162°
" "	"	1.2058	
" "	"	1.1953	
" "	"	1.1968	182°
" "	"	1.2031	
Ethyl phthalate	$C_{12}H_{14}O_4$	1.1316	122°
" "	"	1.1321	
" "	"	1.1294	152°
" "	"	1.1295	
Orthophenyleneglyoxylic acid	$C_6H_4COH.COOH$	1.104	Colson and Gautier.
" "	"		C. R. 102, 689.
Cinnamic, or phenylacrylic acid.	$C_6H_5.CH.CH.COOH$	1.245	E. Kopp. J. P. C.
" "	"		37, 280.
" "	"	1.195	Schabus. J. 3, 392.
" "	"	1.246	42°
" "	"	1.249	Schroder. Ber. 12,
" "	"		1611.
" "	"	1.0565, 133°	Weger. A. C. P.
" "	"	.90974, 300°	221, 61.
Methyl cinnamate	$C_{10}H_{10}O_2$	1.103	E. Kopp. C. R. 21,
" "	"		1376.
" "	"	1.0415, 36°	Weger. A. C. P.
" "	"	.85888, 259°	221, 61.
Ethyl cinnamate	$C_{11}H_{12}O_2$	1.126, 0°	E. Kopp. C. R. 21,
" "	"		1376.
" "	"	1.13	Marchand. A. C. P.
" "	"		32, 269.
" "	"	1.0756, 0°	H. Kopp. A. C. P.
" "	"	1.0498, 202°	95, 307.
" "	"	1.0553	
" "	"	1.0558	0°
" "	"	1.0562	
" "	"	.82143, 271°	Weger. A. C. P. 221,
" "	"		61.
" "	"	1.0490, 20°	Bruhl. A. C. P. 235, 1.
Propyl cinnamate	$C_{12}H_{14}O_2$	1.0465	Kahlbaum. Ber. 16,
" "	"		1491.
" "	"	1.0435, 0°	Weger. A. C. P. 221,
" "	"	.7917, 285°	61.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl $\alpha$ methylorthoxy- phenylacrylate. } " " } " " }	$C_{11} H_{11} O_3$ ----- " " ----- " " -----	1.1404, 15° } 1.1277, 30° } 1.1465, 8°.5 ---	Perkin. J. C. S. 39, 409. Gladstone. Bei. 9, 249.
Methyl $\beta$ methylorthoxy- phenylacrylate. } " " } " " }	" " ----- " " ----- " " -----	1.1486, 15° } 1.1362, 30° } 1.1556, 9°.5 ---	Perkin. J. C. S. 39, 409. Gladstone. Bei. 9, 249.
Ethyl $\alpha$ ethylorthoxy- phenylacrylate. } Ethyl $\beta$ ethylorthoxy- phenylacrylate. }	$C_{13} H_{16} O_3$ ----- " " ----- " " -----	1.084, 15° -- } 1.074, 30° -- } 1.090, 15° ----- 1.090, 10° -----	Perkin. J. C. S. 39, 409. " " Gladstone. Bei. 9, 249.
Methyl $\alpha$ methylorthoxy- phenylcrotonate. } Methyl $\beta$ methylorthoxy- phenylcrotonate. } Methyl $\alpha$ methylorthoxy- phenylangelate. } Methyl $\beta$ methylorthoxy- phenylangelate. }	$C_{12} H_{14} O_3$ ----- " " ----- " " ----- $C_{13} H_{16} O_3$ ----- " " ----- " " -----	1.1112, 15° } 1.1061, 30° } 1.1279, 15° } 1.1136, 30° } 1.1044, 15° } 1.0882, 30° } 1.1100, 15° } 1.1008, 30° }	Perkin. J. C. S. 39, 409. " " " " " " " " " "
Mandelic acid ----- " " ----- Cuminic acid ----- " " -----	$C_6 H_5 \cdot CHOH \cdot COOH$ ----- " " ----- $C_6 H_4 \cdot C_3 H_7 \cdot COOH$ ----- " " -----	1.355 } 1.367 } 4° -- 1.156 } 1.169 } 4° --	Schröder. Ber. 12, 1611. " "
Quinic acid ----- Ethyl veratrate -----	$C_7 H_{12} O_6$ ----- $C_{11} H_{14} O_4$ -----	1.637, 8°.5 --- 1.141, 18° ---	Watts' Dictionary. Will. A. C. P. 37, 198.
Ethyl phenylglyoxylate ----- Ethyl phenylacetacetate -----	$C_{10} H_{10} O_3$ ----- $C_{12} H_{14} O_3$ -----	1.121, 17°.5 --- 1.0861, 16° ---	Chaisen. Ber. 12, 629. Hodgkinson. J. C. S. 37, 481.
Ethyl benzylacetacetate ----- Ethyl methylbenzylacet- acetate. ----- Ethyl benzylmalonate -----	$C_{13} H_{16} O_3$ ----- $C_{14} H_{18} O_3$ ----- $C_{14} H_{18} O_4$ ----- $C_{15} H_{20} O_4$ -----	1.036, 15°.5 --- 1.046, 23° --- 1.077, 15° --- 1.064, 19° ---	Conrad. Ber. 11, 1056. " " Conrad and Bischoff. A. C. P. 204, 203. Conrad and Bischoff. Ber. 13, 595.
Ethyl benzylidenemalo- nate. ----- Ethyl benzylacetosucci- nate. ----- Monomethyl propylpy- rogallate. Picamar. }	$C_{14} H_{16} O_4$ ----- $C_{17} H_{22} O_5$ ----- $C_{10} H_{14} O_3$ ----- " " -----	1.1105, 15° --- 1.088, 15° --- 1.10 ----- 1.10288, 15° ---	Chaisen and Crismer. A. C. P. 218, 132. Conrad. Ber. 11, 1058. Reichenbach. Pastrovich. M. C. 4, 183.

## 25th. Ethers of Aromatic Radicles.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Phenyl acetate	$C_8H_8O_2$	1.074	Boughton, J. 18, 530.
Kresyl acetate	$C_9H_{10}O_2$	1.0499, 23 $^{\circ}$	Gladstone, Bei. 9, 249.
Benzyl acetate	"	1.057, 16 $^{\circ}$ .5	Conrad and Hodgkinson, A. C. P. 193, 312.
"	"	1.0400, 21 $^{\circ}$	Gladstone, Bei. 9, 193, 312.
"	"	1.03814, 22 $^{\circ}$ .5	" 249.
Paraxylyl acetate	$C_{10}H_{12}O_2$	1.0261, 15	Jacobsen, Ber. 11, 28.
Ethylphenyl acetate	"	1.0286	Radzi-zewski, Ber. 9, 873.
"	"	1.0507, 22 $^{\circ}$ .5	Gladstone, Bei. 9, 249.
Methylphenylcarhyl acetate	"	1.05, 17 $^{\circ}$	Radzi-zewski, C. C. 5, 261.
Para-propylphenyl acetate	$C_{11}H_{14}O_2$	1.029, 0 $^{\circ}$	Spica, Ber. 12, 295.
"	"	.9425, 100 $^{\circ}$	"
Ortho-isopropylphenyl acetate	"	1.02714, 0 $^{\circ}$	Filati, G. C. I. 16, 113.
"	"	.93818, 100 $^{\circ}$	"
Para-isopropylphenyl acetate	"	1.026, 0 $^{\circ}$	Paterno and Spica, Ber. 10, 84.
Mesityl acetate	"	1.0903, 16 $^{\circ}$ .5	Wispek, Ber. 16, 1577.
Thymyl acetate	$C_{11}H_{16}O_2$	1.009, 0 $^{\circ}$	Two preparations.
"	"	.924, 100 $^{\circ}$	Paterno, J. C. S. (2), 13, 638.
"	"	1.010, 0 $^{\circ}$	"
Butylphenyl acetate	"	.999, 24 $^{\circ}$	Studer, Ber. 14, 2187.
Diphenylcarhyl acetate	$C_{15}H_{14}O_2$	1.19, 22 $^{\circ}$	Linnemann, A. C. P. 133, 20.
Benzyl propionate	$C_{10}H_{12}O_2$	1.036, 16 $^{\circ}$ .5	Conrad and Hodgkinson, A. C. P. 193, 312.
Benzyl butyrate	$C_{11}H_{14}O_2$	1.016, 16 $^{\circ}$	"
Benzyl isobutyrate	"	1.016, 18 $^{\circ}$	Hodgkinson, A. C. P. 193, 320.
"	"	1.0058, 23	Gladstone, Bei. 9, 249.
Isomer of benzyl isobutyrate	"	1.0228, 22 $^{\circ}$	"
Benzyl phenylacetate	$C_{15}H_{14}O_2$	1.101	Shaw, J. C. S. (2), 13, 59.
Benzyl benzylacetate	$C_{16}H_{16}O_2$	1.071, 21	Conrad and Hodgkinson, A. C. P. 193, 312.
Benzyl benzylpropionate	$C_{17}H_{18}O_2$	1.016, 16 $^{\circ}$ .5	"
Benzyl benzylbutyrate	$C_{17}H_{18}O_2$	1.027, 17 $^{\circ}$ .5	"
Benzyl benzylisobutyrate	"	1.028, 18	"
Benzyl dimethylbenzylacetate	"	1.0285, 18	Hodgkinson, J. C. S. (2), 14, 95.
Benzyl benzoate	$C_{14}H_{12}O_2$	1.114, 18	Kent, A. C. P. 152, 179.
"	"	1.1224, 19 $^{\circ}$ .5	Chasen, Ber. 20, 646.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Benzyl cinnamate -----	$C_{16} H_{14} O_2$ -----	1.098, 14° -----	Scharling. J. 9, 630.
“ “ -----	“ “ -----	1.1145, 16° -----	Busse. Ber. 9, 831.
Cinnamic acetate -----	$C_{11} H_{12} O_2$ -----	.9416, 22° -----	Gladstone. Bei. 9, 249.
Mesitylene diacetate -----	$C_{13} H_{16} O_4$ -----	1.12, 20° -----	Robinet and Colson. C. R. 96, 1863.
Ethyl phenyl carbonate -----	$C_9 H_{10} O_3$ -----	1.117, 0° -----	Fatiano. J. 17, 477.
“ “ “ -----	“ “ -----	1.1134, 0° -----	Pawlewski. Ber. 17, 1205.

## 26th. Aromatic Aldehydes.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Benzaldehyde. Almond oil. -----	$C_6 H_5. C O H$ -----	1.075 -----	Chardin-Hardan-court.
“ -----	“ -----	1.038, 15° -----	Guckelberger. J. 1. 850.
“ -----	“ -----	1.043 -----	Wöhler and Liebig.
“ -----	“ -----	1.0636, 0° -----	Kopp. A. C. P. 94, 257.
“ -----	“ -----	1.0499, 14° 6' -----	Mendeleeff. J. 13, 7.
“ -----	“ -----	1.0504 -----	Lippmann and Hawliczek. Ber. 9, 1461.
“ -----	“ -----	1.067 -----	
“ -----	“ -----	1.0471 } 20° -----	Landolt.
“ -----	“ -----	1.0474 } -----	
“ -----	“ -----	1.0455, 20° -----	Brühl. Bei. 4, 782.
Toluic aldehyde -----	$C_6 H_4. C H_3. C O H$ -----	1.037, 0° -----	Gundelach. B. S. C. 26, 45.
“ “ -----	“ -----	1.024, 22° -----	
Phenylacetic aldehyde -----	“ -----	1.085 -----	Radziszewski. Ber. 9, 372.
Cuminic aldehyde. Cuminol. -----	$C_6 H_4. C_3 H_7. C O H$ -----	.9832, 0° -----	Kopp. A. C. P. 94, 257.
“ “ -----	“ -----	.9727, 13° 4' -----	
“ “ -----	“ -----	.9751, 15° -----	Mendeleeff. J. 13, 7.
“ “ -----	“ -----	.9775, 20° -----	Gladstone. Bei. 9, 249.
Paratolylpropyl aldehyde -----	$C_6 H_4. CH_3. CH_2. CH_2. C O H$ -----	.9941, 13° -----	v. Richter and Schüchner. Ber. 17, 1931.
Salicylic aldehyde, or salicylol. -----	$C_6 H_4. O H. C O H$ -----	1.1731, 13° 3' -----	Piria. A. C. P. 29, 300.
“ “ -----	“ -----	1.1671, 20° -----	Landolt. Bei. 7, 847.
Anisic aldehyde -----	$C_6 H_4. O C H_3. C O H$ -----	1.09, 20° -----	Cnhours. Ann. (3), 14, 484.
“ “ -----	“ -----	1.1228, 18° -----	Rossel. Z. C. 12, 561.
Cinnamic aldehyde -----	$C_9 H_8 O$ -----	1.0497, 20° -----	Brühl. A. C. P. 235, 1.

## 27th. Aromatic Ketones.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl phenyl ketone	$C_6H_5 \cdot C \cdot O \cdot C \cdot H_3$	1.032, 15°	Friedel, J. 10, 270.
Methyl benzyl ketone	$C_7H_7 \cdot C \cdot O \cdot C \cdot H_3$	1.010, 13°	Radzi-zewski, Ber. 3, 199.
Methyl tolyl ketone	"	.9891, 22°	Essner and Gossin, Ber. 17, ref. 429.
Propyl phenyl ketone	$C_6H_5 \cdot C \cdot O \cdot C_3H_7$	.990, 15°	Schmidt and Fieberg, J. C. S. (2), 12, 75.
" " "	"	.992, 15°	Popoff, Ber. 6, 560.
" " "	"	.9949, 15°	Einhorn, In. Diss. Tübingen, 1880.
Isopropyl phenyl ketone	"	.994, 12°	" "
" " "	"	.972, 30°	
" " "	"	.934, 60°	
Methyl xylyl ketone	$C_8H_9 \cdot C \cdot O \cdot C \cdot H_3$	.9962, 15°	Chau and Wellner, Ber. 18, 1856.
Isobutyl phenyl ketone	$C_6H_5 \cdot C \cdot O \cdot C_4H_9$	.993, 17° 5	Popoff, A. C. P. 162, 151.
Tolyl phenyl ketone	$C_6H_5 \cdot C \cdot O \cdot C_7H_7$	1.088, 17° 5	Senf, A. C. P. 220, 252.
Acetocinnamone	$C_9H_7 \cdot C \cdot O \cdot C \cdot H_3$	1.008	Engler and Leist, B. S. C. 20, 204.
Propionylacetophenone	$C_{11}H_{12}O_2$	1.081, 15°	Stylos, Ber. 20, 2181.
Butyrylacetophenone	$C_{12}H_{14}O_2$	1.061, 15°	" "

## 28th. Camphors, Essential Oils, Etc.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Laurel camphor	$C_{10}H_{16}O$	.986	Watts' Dictionary.
" "	"	.996	
Myristic oil	"	.9466, 20°	Gladstone, J. C. S. (2), 10, 1.
Absinthol	"	.973, 24	Leblanc, A. C. P. 56, 357.
"	"	.9267, 20°	Gladstone, J. C. S. (2), 10, 1.
"	"	.9128, 22°	Gladstone, Bei. 9, 249.
Citronell	"	.8742	(Two samples) Gladstone, J. C. S. (2), 10, 1.
"	"	.875	
Fennel oil of carum	"	.8970	Grosser, Ber. 14, 2505.
Eucalypt	"	.871, 20°	Frohe, J. P. C. 82, 186.
Oil of Mentha pulegium	"	.9271	Watts' Dictionary.
" " "	"	.9390	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Oil of <i>Pulegium micranthum</i> .	$C_{10}H_{16}O$ -----	.932, 17° -----	Butlerow. J. 7, 595.
From oil of tansy -----	" -----	.918, 4° -----	Bruylants. Ber. 11, 451.
Thujol -----	" -----	.924, 15° -----	Jahns. Ber. 16, 2950.
Cajeputol -----	$C_{10}H_{18}O$ -----	.9160, 20° -----	Gladstone. J. C. S. (2), 10, 1.
" -----	" -----	.8900, 21°.5 -----	" "
Cajeputene hydrate -----	" -----	.903, 17° -----	Schmidl. J. 13, 480.
" " -----	" -----	.9160, 20° -----	Kanonnikoff. Bei. 7, 592.
Oil of coriander -----	" -----	.871, 14° -----	Kawalier. J. 5, 624.
" " -----	" -----	.8719, 15° -----	Grosser. Ber. 14, 2486.
Cyneol -----	" -----	.92067, 16° -----	Wallach and Brass. A. C. P. 225, 291.
" -----	" -----	.9267, 20° -----	Wallach. A. C. P. 245, 195.
Oil of eucalyptus oleosa -----	" -----	.9075, 20° -----	Gladstone. J. C. S. (2), 10, 1.
Geraniol -----	" -----	.8851, 15° -----	} Jacobsen. Z. C. 14, 171.
" -----	" -----	.8813, 21° -----	
Oil of <i>Licari kanali</i> -----	" -----	.868, 15° -----	Morin. J. C. S. 40, 738.
Oil of <i>Melaleuca ericifolia</i> -----	" -----	.8960, 20° -----	Gladstone. J. C. S. (2), 10, 1.
Oil of <i>Melaleuca linarifolia</i> -----	" -----	.8985, 20° -----	" "
From menthol -----	" -----	.9032 -----	Moriya. C. N. 42, 268.
Menthone -----	" -----	.9126, 0° -----	} Atkinson and Yoshida. J. C. S. 41, 295.
" -----	" -----	.9048, 10° -----	
" -----	" -----	.8972, 20° -----	
" -----	" -----	.8819, 40° -----	
" -----	" -----	.8665, 60° -----	
" -----	" -----	.8511, 80° -----	
" -----	" -----	.8355, 100° -----	
Ngei camphor -----	" -----	1.02 -----	Plowman. J. C. S. (2), 12, 582.
From <i>Osinitopsis asteriscoides</i> .	" -----	.921 -----	Gorup-Besanez. J. 7, 596.
Salviol -----	" -----	.934, 15° -----	Sigiura and Muir. J. C. S. 33, 295.
" -----	" -----	.938, 15° -----	Muir. J. C. S. 37, 13.
Terpane -----	" -----	.935, 0° -----	Bouchardat and Voiry. C. R. 106, 664.
Terpilenol -----	" -----	.961, 0° -----	} Bouchardat and Lafont. B. S. C. 45, 295.
" -----	" -----	.950, 15° -----	
" -----	" -----	.9533, 0° -----	Lafont. B. S. C. 49, 323.
Terpinol * -----	" -----	.952, 0° -----	Bouchardat and Voiry. B. S. C. 47, 870.
" -----	" -----	.9296, 10° -----	Gladstone. J. C. S. 49, 623.

\* List's terpinol (J. 1, 726) is now known to be a mixture.



NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl camphocarbonate	$C_{13}H_{20}O_3$	1.052, 15°	Roser. Ber. 18, 3112.
Camphrene	$C_8H_{12}O$	.974, 6°	Chautard. J. 10, 483.
Diethylcamphresic acid	$C_9H_{22}O_7$	1.128, 13°	Schwanert. J. 16, 397.
Ethyl camphresate	$C_{16}H_{26}O_7$	1.0775, 13°	" "

## 29th. Miscellaneous Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Quinone	$C_6H_4O_2$	1.307	Schröder. Ber. 13, 1070.
"	"	1.318	
Phlorol	$C_8H_{10}O$	1.015, 12°	Sigel. A. C. P. 170, 345.
Carvol	$C_{10}H_{14}O$	.953, 15°	Völckel.
"	"	.9530, 20°	Gladstone. J. C. S. (2), 10, 1.
"	"	.9562, 20°	" "
"	"	.959	Beyer. Ber. 16, 1387.
"	"	.9593	
"	"	.9598	
"	"	.960, 18°.5	
"	"	.7866, 228°	Flückiger.
"	"	.9667, 11°	Schiff. Ber. 19, 560.
Eugenol	$C_{10}H_{12}O_2$	1.076	Gladstone. J. C. S. 49, 623.
"	"	1.0684, 14°	Stenhouse. A. C. P. 95, 106.
"	"	1.066, 15°	Williams. A. C. P. 107, 240.
"	"	1.0778, 0°	Church. J. C. S. (2), 13, 113.
"	"	1.063, 18°.5	Wassermann. J. C. S. (2), 1, 706.
"	"	1.0703, 14°	
"	"	1.066, 17°.5	Tiemann and Kraaz. Ber. 15, 2066.
Isoeugenol	"	1.080, 16°	Gladstone. Bei. 9, 249.
Methyl eugenol ?	$C_{11}H_{14}O_2$	1.046, 15°	Tiemann and Kraaz. Ber. 15, 2066.
"	"	1.055, 15°	Church. J. C. S. (2), 13, 115.
Ethyl eugenol	$C_{12}H_{16}O_2$	1.026, 0°	Petersen. Ber. 21, 1060.
"	"	1.0117, 18°.5	Wassermann. A. C. P. 179, 376.
Propyl eugenol	$C_{13}H_{18}O_2$	1.0024, 16°	
Isobutyl eugenol	$C_{14}H_{20}O_2$	.985, 15°	Wassermann. Ber. 10, 237.
Amyl eugenol	$C_{15}H_{22}O_2$	.976, 16°	" "
Allyl eugenol	$C_{13}H_{16}O_2$	1.018, 15°	Wassermann. Ber. 10, 238.
Coumarin	$C_9H_6O_3$	.9207	" "
			Gladstone. Bei. 9, 249.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Safrol	$C_{10}H_{10}O_2$	1.1141, 0°	Grimaux and Rastie, Z. C. 12, 411.
"	"	1.0959, 18°	J. Schill, Ber. 17, 1935.
Coculignol	$C_{10}H_{14}O_2$	1.05645, 15°	Pastovich, M. C. 4, 189.
Phthalic anhydride	$C_8H_4O_3$	1.527	Schroder, Ber. 12, 1611.
"	"	1.530	
Benzole anhydride	$C_{14}H_{10}O_3$	1.231	
"	"	1.234	" "
"	"	1.247	
Benzo-coumarinic anhydride	$C_{14}H_{18}O_3$	1.043	Malerba, J. 7, 444.
Benzo-cinnamic anhydride	$C_{16}H_{12}O_3$	1.184, 23°	Gerhardt, J. 5, 449.
Benzo-cuminic anhydride	$C_{17}H_{16}O_3$	1.115, 23°	Gerhardt, J. 5, 448.
Pyruvyl benzoate	$C_{10}H_{10}O_3$	1.143, 25°	Romburgh, J. C. S. 44, 63.
Tannic acid	$C_{14}H_{10}O_9$	1.997	W. C. Smith, Am. J. P. 53, 145.
Benzoyl glycollic ether	$C_{11}H_{12}O_4$	1.1509, 20.4	Andrieu, J. 18, 344.
Propylene ethylphenylketate.	$C_{12}H_{16}O_2$	0.88, 22°	Morley and Green, Ber. 17, 3016.
Isomer of benzil	$C_{14}H_{10}O_2$	1.104, 10°	Alexeyeff, J. 17, 335.
Schizetin	$C_{11}H_{14}O_2$	1.1161, 25°	Beilstein and Seelheim, J. 14, 765.
Isobenzopinacone	$C_{26}H_{22}O_2$	1.10, 19°	Linnemann, J. 18, 556.
Derivative of propyl phenylacetate.	$C_{24}H_{20}O_2$	1.039, 17°	Hodgkinson, J. C. S. 37, 482.
Derivative of ethyl phenylacetate.	$C_{18}H_{16}O_2$	1.0628, 20°	" "
$\alpha$ Naphthol	$C_{10}H_8O$	1.224, 4°	Schroder, Ber. 12, 1611.
"	"	1.09539, 98°	Nasini and Bernheimer, G. C. I. 15, 50.
$\beta$ Naphthol	"	1.217, 4°	Schroder, Ber. 12, 1611.
"	"	1.23	Brügelmann, Ber. 17, 2359.
Naphthol	"	9048, at boiling point.	Ramsay, J. C. S. 39, 65.
Methyl $\alpha$ naphthol	$C_{11}H_{10}O$	1.09636, 13.9	Nasini and Bernheimer, G. C. I. 15, 50.
"	"	1.07931, 34.5	
"	"	1.04631, 77.7	
Propyl $\alpha$ naphthol	$C_{13}H_{14}O$	1.04471, 18.4	" "
Methyl $\alpha$ naphthyl oxide	$C_{11}H_{12}O \cdot C_2H_5$	1.0974, 15°	Staedel, Ber. 14, 898.
Methyl naphthyl ketone	$C_{17}H_{12}O \cdot C_2H_5$	1.124, 6°	Roux, Ann. (6), 12, 336.
Anthropnone	$C_{14}H_8O$	1.438	Schroder, Ber. 13, 1070.
"	"	1.426	
"	"	1.425	
"	"	1.419	" "
Phenanthrenequinone	"	1.404	
"	"	1.405	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Asarone -----	$C_{12}H_{16}O_3$ -----	1.165, 18° -----	Butlerow and Rizza. B. S. C. 43, 114.
" -----	" -----	1.0743, 60° -----	
" -----	" -----	1.0655, 95° -----	
Salicin. Natural -----	$C_{13}H_{18}O_7$ -----	1.4338, 26° -----	Piria. Ann. (3), 44, 368.
" Artificial -----	" -----	1.4257 -----	
Santonin -----	$C_{15}H_{18}O_3$ -----	1.247, 20°.5 -----	Trommsdorf. A. C. P. 11, 190.
" -----	" -----	1.1866 -----	Carnelutti and Na- sini. Ber. 13, 2210.
Metasantonin. M. 136° -----	" -----	1.1649 -----	" "
" " 160°.5 -----	" -----	1.1975 -----	
Santonid -----	" -----	1.1967 -----	" "
Metasantonid -----	" -----	1.046 -----	" "
Parasantonid -----	" -----	1.1957 -----	" "
" -----	" -----	1.2015, 20° -----	Nasini. Ber. 14, 1513.
Santonie acid -----	$C_{15}H_{20}O_4$ -----	1.251 -----	Carnelutti and Na- sini. Ber. 13, 2210.
Parasantonie acid -----	" -----	1.2684 -----	" "
Methyl santonate -----	$C_{16}H_{22}O_4$ -----	1.1667 -----	" "
Methyl parasantonate -----	" -----	1.1777 -----	" "
Ethyl santonate -----	$C_{17}H_{24}O_4$ -----	1.1481 -----	" "
Ethyl parasantonate -----	" -----	1.153 -----	" "
Propyl santonate -----	$C_{18}H_{26}O_4$ -----	1.1185 -----	" "
" " -----	" -----	1.125, 20° -----	Nasini. G. C. I. 13, 165.
Propyl parasantonate -----	" -----	1.153 -----	Carnelutti and Na- sini. Ber. 13, 2210.
Isobutyl santonate -----	$C_{19}H_{28}O_4$ -----	1.1181 -----	" "
Allyl santonate -----	$C_{18}H_{24}O_4$ -----	1.1434 -----	" "
Styracin -----	$C_{18}H_{16}O_2$ -----	1.154 -----	Schröder. Ber. 13, 1070.
" -----	" -----	1.159 -----	
Pimaric acid -----	$C_{20}H_{30}O_2$ -----	1.047, 18° -----	Siewert. J. 12, 510.
Sylvic acid -----	" -----	1.1611, 18° -----	" "
Tropilene -----	$C_7H_{10}O$ -----	1.01, 6° -----	Ladenburg. Ber. 14, 2130.
" -----	" -----	1.0091, 0° -----	Ladenburg. A. C. P. 217, 139.
Cinacrol -----	$C_{10}H_{18}O_2$ -----	1.05 -----	Hirzel. Watts' Dic- tionary.
" -----	" -----	1.15 -----	
Colophonone -----	$C_{11}H_{18}O$ -----	.84 -----	Schiel. J. 13, 489.
Apiol -----	$C_{12}H_{14}O_4$ -----	1.015 -----	Lindenborn. Ber. 9, 1478.
Calophyllum resin -----	$C_{14}H_{18}O_4$ -----	1.12, cryst. -----	Levy. C. R. 18, 244.
Antiar resin -----	$C_{16}H_{24}O$ -----	1.032 -----	Mulder. A. C. P. 28, 307.
Tannin from Persea lingue -----	$C_{17}H_{17}O_9$ -----	1.352, 10° -----	Arata. Ber. 14, 2251.
From Sequoia gigantea -----	$C_{18}H_{20}O_3$ -----	1.045 -----	Lunge and Stein- kauler. Ber. 14, 2205.
Turnerol -----	$C_{19}H_{28}O$ -----	.9016, 17° -----	Jackson and Menke. A. C. J. 4, 371.
Guyaquillite -----	$C_{20}H_{26}O_3$ -----	1.092 -----	Dana's Mineralogy.
Hartin -----	$C_{20}H_{34}O_2$ -----	1.115, 19° -----	Schrötter. P. A. 59, 45.
Resin from rosewood -----	$C_{21}H_{21}O_6$ -----	1.2662, 15° -----	Terreil and Wolff. J. C. S. 38, 559.
Cardol -----	$C_{21}H_{31}O_2$ -----	.978, 23° -----	Städeler. J. 1, 577.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl cyanide, or acetonitril.	$C_2H_3N$	.8317, 0°	Kopp. A. C. P. 98, 397.
" " " "	"	.8191, 16°	
" " " "	"	.8052, 0°	Vincent and Delachanal. C. R. 90, 747.
" " " "	"	.7155, 81°·2	Schiff. Bei. 9, 559.
Methyl carbamine	"	.7557, 14°	Gautier, Rosecand Schorlemmer's Treatise.
Ethyl cyanide, or propionitril.	$C_3H_5N$	.7017, 97°	Ramsay. J. C. S. 35, 463.
" " " "	"	.80101, 0°	Thorpe. J. C. S. 37, 371.
" " " "	"	.70098, 97°·08	
" " " "	"	.7862, 19°	Gladstone. Bei. 9, 249.
" " " "	"	.7015, 97°	Schiff. Bei. 9, 559.
Ethyl carbamine	"	.757, 15°	Polonze, Watts' Dictionary.
" " " "	"	.7889, 12°·6	Frankland and Kolbe. J. 1, 552.
Propyl cyanide, or butyronitril.	$C_4H_7N$	.795, 12°·5	Dumas. J. 1, 594.
Isopropyl carbamine	"	.7596, 0	Gautier. B. S. C. 11, 224.
Butyl cyanide, or valeronitril.	$C_5H_9N$	.8164, 0°	Liébm and Rossi. A. C. P. 158, 137.
Isobutyl cyanide, or isovaleronitril.	"	.810	Schlieper. A. C. P. 59, 15.
" " " "	"	.813, 15°	Guckelberger. J. 1, 852.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isobutyl cyanide, or isovaleronitril.	$C_4 H_9 \cdot C N$	.8226, 0°	Erlenmeyer and Hell. A. C. P. 160, 257. Schiff. Bei. 9, 559. Gladstone. Bei. 9, 249.
" " "	"	.8146, 10°	
" " "	"	.8060, 20°	
" " "	"	.6921, 129° 3	
" " "	"	.8010, 18°	Gautier. Z. C. 12, 415.
Isobutyl carbamine	"	.7873, 4°	
Isoamyl cyanide, or capronitril.	$C_5 H_{11} \cdot C N$	.8061, 20°	Frankland and Kolbe. J. 1, 559. Gladstone. Bei. 9, 249.
" " "	"	.8040, 18°	
" " "	"	.6861, 154°	Schiff. Bei. 9, 559. Mehlis. A.C.P. 185, 368.
Oenanthonitril	$C_6 H_{13} \cdot C N$	.895, 22°	
Heptyl cyanide	$C_7 H_{15} \cdot C N$	.8201, 13° 3	Felletár. J. 21, 634. Eichler. Ber. 12, 1888.
Octyl cyanide	$C_8 H_{17} \cdot C N$	.786, 16°	
Isooctyl cyanide	"	.8187, 14°	Felletár. J. 21, 634.
Lauroitril	$C_{11} H_{23} \cdot C N$	.8350, 0°	
"	"	.8273, 15°	Krafft and Stauffer. Ber. 15, 1728.
"	"	.7675, 98° 9	
Myristonitril	$C_{13} H_{27} \cdot C N$	.8281, 19°	" "
"	"	.8241, 25°	
"	"	.7724, 99°	" "
Palmitonitril	$C_{15} H_{31} \cdot C N$	.8224, 31°	
"	"	.8186, 40°	" "
"	"	.7761, 98° 9	
Stearonitril	$C_{17} H_{35} \cdot C N$	.8178, 41°	" "
"	"	.8149, 45°	
"	"	.7790, 99° 2	

## 2d. Amines of the Paraffin Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Trimethylamine	$N \cdot (C H_3)_3$	.673, 0°	Blennard. Roscoe and Schorlemmer's Treatise.
Ethylamine	$N H_2 \cdot C_2 H_5$	.6964, 8°	Wurtz. J. 3, 446.
Diethylamine	$N H \cdot (C_2 H_5)_2$	.7262, 0°	
"	"	.7159, 10°	Oudemans. Bei. 6, 353. Values given for every 5°.
"	"	.7055, 20°	
"	"	.6949, 30°	
"	"	.6844, 40°	
"	"	.6735, 50°	
"	"	.6680, 55°	Gladstone. Bei. 9, 249.
"	"	.7092, 19°	
"	"	.6684	56°
"	"	.6686	
Triethylamine	$N \cdot (C_2 H_5)_3$	.7277, 20°	Schiff. Ber. 19, 560.
"	"	.7317, 19°	Brühl. Bei. 4, 779. Gladstone. Bei. 9, 249.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Triethylamine	$N, (C_2H_5)_3$	.6621, 89°	Schiff, Ber. 19, 560.
Propylamine	$NH_2, C_3H_7$	.7283, 0°	Silva, Z. C. 12, 638.
"	"	.7131, 21°	Linnemann, A. C. P. 161, 18.
"	"	.7186, 20°	Schiff, Ber. 19, 560.
"	"	.6883, 192.5	Siersch, J. 21, 682.
Isopropylamine	"	.690, 18°	Vincent, Ber. 19, ref. 680.
Dipropylamine	"	.756, 0°	Siersch, J. 21, 682.
Diisopropylamine	$NH, (C_3H_7)_2$	.722, 22°	Zander, A. C. P. 211, 181.
Tripropylamine	$N, (C_3H_7)_3$	.7609, 0°	Vincent, Ber. 19, ref. 680.
"	"	.6426, 1562.5	Lieben and Rossi, A. C. P. 93, 124.
"	"	.771, 0°	Linnemann and Zotta, Ann. 4, 27, 275.
Butylamine	$NH_2, C_4H_9$	.7553, 0°	Linnemann, Ann. 4, 27, 238.
"	"	.7333, 26°	Schiff, Ber. 19, 560.
"	"	.7401, 20°	Linnemann, Ann. 4, 27, 268.
Isobutylamine	"	.7357, 15°	"
"	"	.6865, 67.67	"
Trimethylcarbamolamine	"	.6987, 15°	"
"	"	.7137, 0°	"
"	"	.7054, 8°	Rudolf, Ber. 12, 1023.
"	"	.6931, 15°	"
"	"	.7155, 0°	"
"	"	.7078, 72.8	Brauer, A. C. P. 192, 72.
"	"	.7004, 15°	"
Tributylamine	$N, (C_4H_9)_3$	.791, 0°	"
"	"	.7782, 20°	Lieben and Rossi, A. C. P. 165, 109.
"	"	.7677, 40°	"
Triisobutylamine	"	.785, 21°	Sachtleben, Ber. 11, 734.
Amphetamine	$NH_2, C_6H_{11}$	.7503, 18°	Wurtz, J. 19, 451.
"	"	.815, 0°	Wurtz, J. 19, 425.
"	"	.7517, 22.5	Plimpton, J. C. S. 39, 331.
" Active	"	.7725, 0°	Plimpton, J. C. S. 39, 331.
" Inactive	"	.7678, 0°	"
"	"	.6848, 94.8	Schiff, Ber. 9, 559.
Dimethylethylcarbamolamine	"	.755, 0°	Wurtz, J. 19, 425.
"	"	.7611, 0°	Rudolf, J. C. S. 38, 545.
"	"	.7475, 15°	"
Diethylamine	$NH, C_4H_{11}$	.7825, 0°	Silva, Z. C. 10, 157.
" Active	"	.7878, 0°	Plimpton, J. C. S. 39, 331.
" Inactive	"	.7776, 14°	"
Triethylamine	$N, (C_2H_5)_3$	.7964, 13°	"
" Inactive	"	.7882, 13°	"
Hexylamine	$NH_2, C_6H_{13}$	.768, 18°	Pelouse and Chabours, J. 16, 527.
Secondary hexylamine	"	.7638	Uppenkamp, Ber. 8, 57.
Octylamine	$NH_2, C_8H_{17}$	.786	Squire, J. 7, 485.

## 3d. The Aniline Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Amidobenzene, or aniline	$C_6 H_5 \cdot H_2 N$ -----	1.020, 16° ----	Hofmann. A. C. P. 47, 50.
"	"	1.028 -----	Fritzsche. J. P. C. 20, 453.
"	"	1.0361, 0° -- }	Kopp. A. C. P. 98, 367.
"	"	1.0251, 13° 7' }	
"	"	1.018, 15° 5' ----	Städeler and Arndt. J. 17, 425.
"	"	1.024, 17° 5' ----	Lucius.
"	"	1.026, 15° -----	Kern. Ber. 10, 199.
"	"	.8527, 183° ----	Ramsay. J. C. S. 35, 463.
"	"	1.0379, 0° -----	} Thorpe. J. C. S. 37, 371.
"	"	.87274, 183° 7' ----	
"	"	1.02478, 16° 3' ----	Johst. P. A. (2), 20, 56.
"	"	1.0216, 20° -----	Brühl.
"	"	1.0131, 25° 7' }	Schall. Ber. 17, 2555.
"	"	.9484, 100° 9' ----	
"	"	1.016, 13° -----	Gladstone. Bei. 9, 249.
"	"	1.0322, 7° 5' ----	
"	"	.8751, 183° 1' ----	Schiff. Bei. 9, 559.
"	"	.92256, 130° 9' ----	} Taken at different pressures, each t° being the boiling point at the pressure observed. Neubeck. Z. P. C. 1, 655.
"	"	.91858, 135° 1' ----	
"	"	.90708, 147° 2' ----	
"	"	.90632, 148° -----	
"	"	.89272, 162° -----	
"	"	.89233, 162° 6' ----	
"	"	.88077 } 173° 9' ----	
"	"	.88097 } -----	
"	"	.87443, 181° 6' ----	
"	"	.87424, 181° 8' ----	
"	"	.87384 } 183° 1' ----	
"	"	.87356 } -----	
"	"	1.0216, 20° -----	Knops. V. H. V. 1887, 17.
"	"	1.02204, 20° ----	Weegmann. Z. P. C. 2, 218.
Methylaniline -----	$C_6 H_5 \cdot C H_3 \cdot H N$ -----	.976, 15° -----	Hofmann. Ber. 7, 526.
Benzylamine -----	$C_6 H_5 \cdot C H_2 H_2 N$ -----	.990, 14° -----	Limpriecht. J. 20, 510.
Orthotoluidine -----	$C_6 H_4 \cdot C H_3 \cdot H_2 N$ -----	1.0002, 16° 3' ----	Rosenstiehl. J. 21, 745.
"	"	1.003, 20° 2' ----	} Three preparations. Beilstein and Kuhlberg. Z. C. 12, 523.
"	"	1.002, 22° -----	
"	"	.998, 25° 5' ----	
"	"	1.046 -----	Rüdorff. Ber. 12, 251.
"	"	.8302, 197° ----	Ramsay. J. C. S. 35, 463.
"	"	.9986, 20° -----	Brühl. Bei. 4, 780.
"	"	1.0038, 15° -----	Hirsch. Ber. 18, 1511.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Orthotoluidine	$C_6H_4 \cdot C_2H_5 \cdot H_2N$	.89967, 142°·7	Taken at different pressures, each t <sup>l</sup> being the boiling point at the pressure observed. Neuback, Z. P. C. 1, 657.
"	"	.89292, 143°·2	
"	"	.87527, 163°·2	
"	"	.87456, 163°·9	
"	"	.86064	
"	"	.86078	
"	"	.85214	
"	"	.85185	
"	"	.84473, 198°	
"	"	.84448	
Metatoluidine	"	.84320	Lorenz, C. N. 30, 166.
"	"	.808, 25°	
"	"	.88528	
"	"	.88591	
"	"	.86525, 163°	
"	"	.86283, 171°	
"	"	.85231, 184°	
"	"	.85121, 185°	
"	"	.84539, 191°	
"	"	.84233, 193°	
"	"	.83523	Taken at different pressures, each t <sup>l</sup> being the boiling point at the pressure observed. Neuback, Z. P. C. 1, 658.
"	"	.83537	
"	"	.83385	
"	"	.83351	
Paratoluidine	"	.88313, 143°	
"	"	.88269, 143°·2	
"	"	.86131	
"	"	.86130	
"	"	.85025, 178°·4	
"	"	.84858, 184°	
"	"	.83814	
"	"	.83850	
"	"	.83171	Hofmann, C. N. 27, 1.
"	"	.83178	
"	"	.82995, 201°·5	
Dimethylaniline	$C_6H_5 \cdot C_2H_5 \cdot N$	.9553	
"	"	.9645, 15°	
"	"	.7941, 190°	
"	"	.6575, 20°	
Ethylaniline	$C_6H_5 \cdot C_2H_5 \cdot H_2N$	.954, 18°	Hofmann, J. 2, 398.
Ethylanilobenzene, 1·2	$C_6H_5 \cdot C_2H_5 \cdot H_2N$	.983, 22°	
"	"	.975, 22°	
Methyltoluidine, 1·2	$C_6H_4 \cdot CH_3 \cdot CH_2 \cdot H_2N$	.973, 15°	
"	"	.9742, 16°	
"	"	.977, 17°·5	
"	"	.977, 17°·5	
"	"	.977, 17°·5	
"	"	.977, 17°·5	
"	"	.977, 17°·5	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Xylidine. 1.3.4	$C_6H_3(CH_3)_2H_2N$	.985, 18°.5	Tawildarow. Z. C. 13, 418.
" "	"	.9184, 25°	Hofmann. Ber. 9, 1295.
" "	"	.86651	} Taken at different pressures, each t°. being the boiling point at the pressure observed. Neubeck. Z. P. C. 1, 662.
" "	"	.86687	
" "	"	.84874, 182°	
" "	"	.83473, 197°	
" "	"	.82374, 205°	
" "	"	.81633	
" "	"	.81597	
" "	"	.81454	
" "	"	.81436	} 218°
" 1.3.5	"	.9935, 0°	
" "	"	.972, 15°	Wroblevsky. Ber. 10, 1249.
" 1.4.2	"	.980, 15°	Nölting and Forel. Ber. 18, 2678.
"	"	.9867, 19°	Nölting and Forel. Ber. 18, 2680.
			Gladstone. Ber. 9, 249.
Dimethyltoluidine. 1.2	$C_6H_4.CH_3.(CH_3)_2N$	.9324	Hofmann. C. N. 27, 1.
" 1.3	"	.9368	" "
" 1.4	"	.988	" "
Propylaniline	$C_6H_5.C_3H_7.HN$	.949, 18°	Pictet and Crépieux. Ber. 21, 1106.
Ethyltoluidine. 1.3	$C_6H_4.CH_3.C_2H_5HN$	.869, 20°	Wroblevsky. J. C. S. (2), 13, 455.
" " 1.4	"	.9391, 15°.5	Morley and Abel. J. 4, 497.
Cumidine	$C_6H_4.C_3H_7.H_2N$	.8526	Nicholson. J. 1, 664.
Pseudocumidine. 1.3.5.6	$C_6H_2(C_2H_5)_3H_2N$	.9633	Hofmann. C. N. 27, 1.
Diethylaniline	$C_6H_5(C_2H_5)_2N$	.939, 18°	Hofmann. J. 2, 399.
Isobutylaniline	$C_6H_5.C_4H_9.HN$	.9262, 15°	Giannetti. Ber. 14, 1759.
"	"	.940, 18°	Pictet and Crépieux. Ber. 21, 1106.
Dimethylxylidine	$C_6H_3(CH_3)_2(C_2H_5)_2N$	.9293	Hofmann. C. N. 27, 1.
Tetramethylaniline	$C_6H_2(C_2H_5)_4HN$	.978, 24°	Hofmann. Ber. 17, 1912.
Isoamylaniline	$C_6H_5.C_3H_7.HN$	.928, 15°	Pictet and Crépieux. Ber. 21, 1106.
Diethyltoluidine. 1.4	$C_6H_4.CH_3(C_2H_5)_2N$	.9242, 15°.5	Morley and Abel. J. 7, 498.
Dimethylmesidine. 1.3.5.6	$C_6H_2(C_2H_5)_3(C_2H_5)_2N$	.9076	Hofmann. C. N. 27, 1.
Methylamylaniline	$C_6H_5.C_3H_7.C_2H_5N$	.906, 20°	Claus and Rautenberg. Ber. 14, 622.
Dipropylaniline	$C_6H_5(C_3H_7)_2N$	.9240, 0°	} Zander. A. C. P. 214, 181.
"	"	.7267, 245°.4	
Diisopropylaniline	"	.9338, 0°	
"	"	.7504, 221°	" "
Trimethyl-diethylaniline	$C_6H_3(CH_3)_3(C_2H_5)_2HN$	.971	Ruttan. Ber. 19, 2384.
Allylaniline	$C_6H_5.C_3H_5HN$	.982, 25°	Schiff. J. 17, 415.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Diadlylaniline	$C_6H_5(C_3H_5)_2N$	.9680, 0°	Zander, A. C. P. 214.
"	"	.7667, 244°	181.
Diphenylamine	$NH(C_6H_5)_2$	1.156 (1.42°)	Schroder, Ber. 42,
"	"	1.161	561.
"	"	.8296, 310°	Ramsay, J. C. S. 35,
			463.
Methyldiphenylamine	$N(C_6H_5)_2CH_3$	1.0176, 20°	Brühl, A. C. P.
			235, 1.
Dibenzylamine	$NH(C_7H_7)_2$	1.033, 14°	Limpricht, J. 20,
			510.
Amidobenzylamine	$C_7H_{10}N_2$	1.08, 20°	Amiel and Hof-
			mann, Ber. 19,
			1288.
Metamidodimethylaniline	$C_8H_{12}N_2$	.995, 25°	Groll, Ber. 19, 200.

## 4th. The Pyridine Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Pyridine	$C_5H_5N$	.9858, 0°	Anderson, J. 10, 397.
"	"	.924, 22°	Thenius, J. 14, 502.
"	"	.8617, 117°	Ramsay, J. C. S. 35,
			463.
"	"	.9802, 0°	Richard, Ber. 13,
			198.
"	"	.8823 (115°)	Schiff, Ber. 19, 560.
"	"	.8826	
"	"	1.0033, 0°	Ladenburg, Ber. 21,
			289.
<i>α</i> Picoline	$C_6H_7N$	.955, 10°	Anderson, A. C. P.
			60, 93.
"	"	.9613, 0°	Anderson, J. 10, 397.
"	"	.933, 22°	Thenius, J. 14, 502.
"	"	.8197, 134°	Ramsay, J. C. S. 35,
			463.
"	"	.9560, 0°	Richard, Ber. 13,
			198.
"	"	.96161, 0°	Thorpe, J. C. S.
			37, 371.
"	"	.83258, 133° 5'	Gladstone, Phil. 9,
			249.
"	"	.96559, 0°	Lange, Ber. 18,
			3436.
"	"	.96477, 4°	Durkopp and
			Schlaugk, Ber.
			20, 1660.
"	"	.9656, 0°	Ladenburg, C. R.
			103, 692.
β Picoline	"	.97712, 0°	Hesekiel, Ber. 18,
"	"	.94965, 30°	3091.
"	"	.9771, 0°	Ladenburg, C. R.
			103, 692.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
$\gamma$ Picoline	$C_6H_7N$	.9708, 0°	Lange. Ber. 18, 3436.
"	"	.9708, 0°	Ladenburg. C. R. 103, 692.
"	"	.9742, 0°	Ladenburg. Ber. 21, 287.
$\alpha$ Lutidine	$C_7H_9N$	.928	Williams. J. 7, 494.
"	"	.9467, 0°	Anderson. J. 10, 397.
"	"	.945, 22°	Thenius. J. 14, 502.
"	"	.9467, 0°	Williams. J. 17, 437.
"	"	.7916, 154°	Ramsay. J. C. S. 35, 463.
"	"	.9377, 0°	Richard. Ber. 13, 198.
"	"	.9545, 0°	Ladenburg and Roth. Ber. 18, 52.
" $\alpha-\gamma$	"	.9503, 0°	Ladenburg and Roth. Ber. 18, 913.
" $\alpha-\alpha$	"	.9424, 0°	Ladenburg. C. R. 103, 692.
$\beta$ Lutidine	"	.9555, 0°	Williams. J. 17, 437.
"	"	.9593, 0°	Coninek. C. R. 91, 296.
$\alpha$ Ethylpyridine	"	.9495 } 0°	Ladenburg. Ber. 20, 1653.
"	"	.9498 }	
$\gamma$ Ethylpyridine	"	.9522, 0°	Ladenburg. Ber. 18, 2963.
"	"	.9358, 20°	
$\alpha$ Collidine	$C_8H_{11}N$	.921	Anderson. J. 7, 490.
"	"	.9439, 0°	Anderson. J. 10, 397.
"	"	.953, 22°	Thenius. J. 14, 502.
"	"	.943	Wurtz. Ber. 12, 1710.
"	"	.7839, 173°	Ramsay. J. C. S. 35, 463.
"	"	.9291, 0°	Richard. Ber. 13, 198.
"	"	.917, 15°	Hantzsch. Ber. 15, 2914.
"	"	.9286, 16°.8	Weidel and Pick. S. W. A. 90, 972.
"	"	.9224, 15°	Mohler. Ber. 21, 1014.
$\beta$ Collidine	"	.9656, 0°	Coninek. C. R. 91, 296.
Aldehyde collidine	"	.9389, 4°	Dürkopf. Ber. 18, 920.
$\alpha$ Isopropylpyridine	"	.9342, 0°	Ladenburg. C. R. 103, 692.
$\gamma$ Isopropylpyridine	"	.9408, 0°	Ladenburg and Schrader. Ber. 17, 1121.
"	"	.9439, 0°	Ladenburg. C. R. 103, 692.
$\gamma$ Propylpyridine	"	.9393, 0°	Two lots. Ladenburg. Ber. 17, 772.
$\alpha$ Propylpyridine	"	.9411, 0°	
"	"	.9306, 10°	
Parvoline	$C_9H_{13}N$	.966, 22°	Thenius. J. 14, 502.
"	"	.916, 14°	Engelmann. J. C. S. 50, 259.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Paryoline.....	$C_9 H_{13} N$ .....	.94185, 0°.....	{ Dürkopp and Schlaugk. Ber. 21, 832.
".....	".....	.92894, 16°.....	
Coridine.....	$C_{10} H_{15} N$ .....	.974, 22°.....	Thenius. J. 14, 502.
Rubidine.....	$C_{11} H_{17} N$ .....	1.017, 22°.....	" "
Viridine.....	$C_{12} H_{19} N$ .....	1.024, 22°.....	" "
Allyl pyridine.....	$C_8 H_9 N$ .....	.9595, 0°.....	Ladenburg. Ber. 19, 2578.
Piperidine. From piperine.....	$C_5 H_{11} N$ .....	.8810, 0°.....	Ladenburg and Roth. Ber. 17, 513.
" Synthetic.....	".....	.8814, 4°.....	
".....	".....	.7791.....	Schiff. Ber. 19, 560.
".....	".....	.7801, 105°.....	
".....	".....	.7810.....	
$\alpha$ Methylpiperidine.....	$C_6 H_{12} N$ .....	.8601, 0°.....	Ladenburg and Roth. Ber. 18, 47.
".....	".....	.860, 0°.....	Ladenburg. C. R. 103, 747.
$\beta$ Methylpiperidine.....	".....	.8686, 4°.....	Hesekiel. Ber. 18, 910.
".....	".....	.8684, 0°.....	Ladenburg. C. R. 103, 747.
$\alpha$ - $\alpha$ Dimethylpiperidine.....	$C_7 H_{15} N$ .....	.8492, 4°.....	Ladenburg and Roth. Ber. 18, 54.
$\alpha$ - $\gamma$ Dimethylpiperidine.....	".....	.8615, 0°.....	Ladenburg. C. R. 103, 747.
$\alpha$ Ethylpiperidine.....	".....	.8674, 0°.....	Ladenburg. Ber. 18, 2963.
$\gamma$ Ethylpiperidine.....	".....	.8759, 0°.....	Ladenburg. Ber. 18, 2964.
Methyl- $\alpha$ -ethylpiperidine.....	$C_7 H_{15} N$ .....	.8495, 0°.....	Ladenburg. C. R. 103, 747.
$\alpha$ Propylpiperidine. Confin.....	".....	.89.....	Geiger.
".....	".....	.878.....	Blyth. J. 2, 388.
".....	".....	.846, 125.5.....	Petit. B. S. C. 27, 337.
".....	".....	.886.....	Schorm. Ber. 14, 1767.
".....	".....	.913, 0°.....	{ Two preparations. Schiff. A. C. P. 166, 88.
".....	".....	.899, 15°.....	
".....	".....	.842, 90°.....	
".....	".....	.886, 0°.....	
".....	".....	.873, 15°.....	
".....	".....	.911, 90°.....	Ladenburg. Ber. 17, 774.
".....	".....	.863.....	
".....	".....	.875, 0°.....	Ladenburg. Ber. 17, 772.
".....	".....	.8626, 0°.....	Ladenburg. Ber. 19, 2580.
$\gamma$ Propylpiperidine.....	".....	.870, 0°.....	Ladenburg. Ber. 17, 772.
$\alpha$ Isopropylpiperidine.....	".....	.860, 0°.....	Ladenburg. Ber. 17, 1676.
".....	".....	.8676, 0°.....	Ladenburg. C. R. 103, 747.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl- $\alpha$ $\gamma$ -isopropylpi- peridine.	$C_9 H_{19} N$ -----	.8593, 0° -----	Ladenburg. C. R. 103, 747.
Copellidine -----	$C_8 H_{17} N$ -----	.8653, 0° -----	Dürkopf. Ber. 18, 920.
" -----	" -----	.8546, 15° -----	
Methylcopellidine -----	$C_9 H_{19} N$ -----	.8519, 0° -----	" "
" -----	" -----	.8440, 13° -----	
Dimethylcopellidine -----	$C_{10} H_{21} N$ -----	.7816, 25° -----	" "
$\alpha$ Pipecoleine -----	$C_6 H_{11} N$ -----	.8801, 0° -----	Ladenburg. Ber. 20, 1646.
$\gamma$ Pipecoleine -----	$C_6 H_{13} N$ -----	.8674, 0° -----	Ladenburg. Ber. 21, 288.
$\alpha$ Isopropylpipeidine -----	$C_8 H_{15} N$ -----	.8956, 0° -----	Ladenburg. Ber. 20, 1647.
Hydrolutidine. $\alpha$ - $\gamma$ -----	$C_7 H_{13} N$ -----	.8615, 0° -----	Ladenburg and Roth. Ber. 18, 919.
Hydrotropidine -----	$C_8 H_{15} N$ -----	.9366, 0° -----	Ladenburg. Ber. 16, 1409.
" -----	" -----	.9259, 15° -----	
$\alpha$ Coniceine -----	" -----	.893, 15° -----	Hofmann. Ber. 18, 10.
Paradiconiine -----	$C_{16} H_{27} N$ -----	.915, 15° -----	Schiff. A. C. P. 166, 88.
Quinoline or chinoline -----	$C_9 H_7 N$ -----	1.081, 10° -----	Hofmann. A. C. P. 47, 79.
" " -----	" -----	1.1081, 0° -----	Skraup. Ber. 14, 1002.
" " -----	" -----	1.0947, 20° -----	
" " -----	" -----	1.0699, 50° -----	Coninek. J. C. S. 44, 89.
" " -----	" -----	1.1055, 0° -----	
" " -----	" -----	1.0965, 11° 5	Gladstone. Bei. 9, 249.
" " -----	" -----	1.096 -----	
" " -----	" -----	1.1021 { 10° -----	Schiff. Ber. 19, 560. Williams. J. 9, 536.
" " -----	" -----	.9211, 234° -----	
Lepidine -----	$C_{10} H_9 N$ -----	1.072, 15° -----	Skraup. Ber. 14, 1002.
Orthomethylquinoline -----	" -----	1.0852, 0° -----	
" -----	" -----	1.0734, 20° -----	Skraup. Ber. 15, 2255.
" -----	" -----	1.0586, 50° -----	
Metamethylquinoline -----	" -----	1.0839, 0° -----	Skraup. Ber. 14, 1002.
" -----	" -----	1.0722, 20° -----	
" -----	" -----	1.0576, 50° -----	Skraup. Ber. 14, 1002.
Paramethylquinoline -----	" -----	1.0815, 0° -----	
" -----	" -----	1.0671, 20° -----	Berend. Ber. 18, 3165.
" -----	" -----	1.0560, 50° -----	
Dimethylquinoline -----	$C_{11} H_{11} N$ -----	1.0752, 4° -----	Beyer. J. P. C. (2), 33, 402.
" $\alpha$ - $\gamma$ -----	" -----	1.0611, 15° -----	Skraup and Vort- mann. M. C. 4, 593.
Metadipyridyl -----	$C_{10} H_8 N_2$ -----	1.1757, 0° -----	
" -----	" -----	1.1635, 20° -----	Ramsay. P. M. (5), 6, 29.
" -----	" -----	1.1493, 50° -----	
Isodipyridine -----	$C_{10} H_{10} N_2$ -----	1.08 -----	Cahours and Etard. Ber. 13, 777.
" -----	" -----	1.1245, 13° -----	
Dipicoline -----	$C_{12} H_{14} N_2$ -----	1.12 -----	Ramsay. P. M. (5), 6, 31.
" -----	" -----	1.077 -----	Anderson.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Nicotine.....	$C_{10}H_{14}N_2$	1.033, 4°	Barral. J. 1, 614.
".....	"	1.027, 15°	
".....	"	1.018, 30°	
".....	"	1.0006, 50°	
".....	"	.9424, 101°·5	
".....	"	1.01837, 10°·2	
".....	"	1.01101, 20°	Landolt. A. C. P.
".....	"	1.00373, 30°	189, 241.
".....	"	1.0111, 15°	Skalweit. Ber. 14, 1809.
Hydronicotine.....	$C_{10}H_{16}N_2$	.993, 17°	Etard. C. R. 97, 1218.
Dipiperidyl.....	$C_{10}H_{20}N_2$	.9561, 4°	Liebrecht. Ber. 19, 2591.
<i>a</i> Stillbazoline.....	$C_{11}H_{19}N$	.9874, 0°	Baurath. Ber. 21, 818.
Dihydro- <i>a</i> -stillbazol.....	$C_{11}H_{21}N$	1.0465, 0°	" "

## 5th. Miscellaneous Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dimethylhydrazin.....	$C_2H_8N_2$	.801, 11°	Renouf. Ber. 13, 2171.
Ethylene diamine.....	$C_2H_4 \cdot N \cdot H_2$	.902	Rhousapoulos and Meyer. J. C. S. 42, 940.
Propylene diamine.....	$C_3H_6 \cdot N \cdot H_2$	.878, 15°	Hofmann. Ber. 6, 310.
Pentamethylene diamine.....	$C_5H_{10} \cdot N \cdot H_2$	.9171, 0°	Ladenburg. Ber. 18, 2957.
3 Methyltetramethylene diamine.....	"	.8836, 20°	Oldsch. Ber. 20, 1655.
Ethylene cyanide.....	$C_2H_4(CN)_2$	1.023, 45°	Simpson. J. 14, 654.
Pyrotartro-nitril.....	$C_4H_6(CN)_2$	.9961, 11°	Henry. Ber. 18, ref. 330.
Crotonitril.....	$C_4H_5N$	.8389, 12°	Will and Kornet.
".....	"	.8491, 0°	Rhine and Tollens.
".....	"	.8351, 15°	A. C. P. 159, 105.
Acyl carbamine.....	$C_3H_5 \cdot C \cdot N$	.812, 0°	Lücke. A. C. P. 112, 319.
Allylamine.....	$C_3H_5 \cdot H_2N$	.794, 17°	Oeser. J. 18, 506.
".....	"	.7754, 10°·5	Four samples. Gladstone. Ber. 9, 249.
".....	"	.7775, 11°	
".....	"	.7693, 17°·5	
".....	"	.7684, 19°	
".....	"	.7261, 56°	Schiff. Ber. 9, 559.
Triallylamine.....	$(C_3H_5)_3N$	.8209, 0°	Zander. A. C. P. 214, 181.
".....	"	.6826, 155°·5	Liebermann and Paul. Ber. 16, 523.
Propylallylamine.....	$C_3H_5 \cdot C_3H_5 \cdot H_2N$	.7708, 18°	
Isomylallylamine.....	$C_5H_{11} \cdot C_3H_5 \cdot H_2N$	.7777, 18°	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Pyrrrol-----	$C_4 H_5 N$ -----	1.077 -----	Anderson. J. 10, 399.
"-----	"-----	.7276, 133°-----	Ramsay. J. C. S. 35, 463.
"-----	"-----	.9752, 12° 5'-----	Weidel and Ciamician. Ber. 13, 71.
"-----	"-----	.9606 -----	Gladstone. Ber. 9, 249.
Methylpyrrol-----	$C_5 H_7 N$ -----	.9203, 10°-----	Bell. Ber. 10, 1866.
Ethylpyrrol-----	$C_6 H_9 N$ -----	.8881, 16°-----	Bell. Ber. 9, 936.
"-----	"-----	.9042, 10°-----	Bell. Ber. 10, 1862.
Amylpyrrol-----	$C_9 H_{15} N$ -----	.8786, 10°-----	Bell. Ber. 10, 866.
Pyrrrolidin-----	$C_4 H_9 N$ -----	.879, 0°-----	Petersen. Ber. 21, 290.
"-----	"-----	.871, 10°-----	
Methylpyrrrolidin-----	$C_5 H_{11} N$ -----	.8654, 0°-----	Oldach. Ber. 20, 1155.
Methylphenylpyrazol-----	$C_{10} H_{10} N_2$ -----	1.085 -----	Claisen and Stylos. Ber. 21, 1143 and 1147.
"-----	"-----	1.081 -----	
Ethylphenylpyrazol-----	$C_{11} H_{12} N_2$ -----	1.064, 15°-----	Claisen and Stylos. Ber. 21, 1148.
Propylphenylpyrazol-----	$C_{12} H_{14} N_2$ -----	1.0435, 15°-----	"-----
$\alpha$ Glucosine-----	$C_6 H_8 N_2$ -----	1.038, 0°-----	Tanret. B. S. C. 44, 104.
$\beta$ Glucosine-----	$C_7 H_{10} N_2$ -----	1.012, 0°-----	"-----
"-----	"-----	.9826, 12°-----	Morin. Ber. 21, ref. 188.
Methylglyoxalin-----	$C_4 H_6 N_2$ -----	1.0363 -----	Wallach and Schulze. Ber. 14, 424.
"-----	"-----	1.0359, 23°-----	Goldschmidt. Ber. 14, 1846.
Ethylglyoxalin-----	$C_5 H_8 N_2$ -----	.999 -----	Wallach. Ber. 16, 535.
Oxalmethylethylin-----	"-----	1.0051, 11°-----	Radziszewski. Ber. 16, 487.
Propylglyoxalin-----	$C_6 H_{10} N_2$ -----	.967, 16°-----	Wallach. Ber. 15, 650.
Oxalethylethylin-----	"-----	.9820 -----	Wallach and Stricker. Ber. 13, 512.
"-----	"-----	.980 -----	Radziszewski. Ber. 16, 487.
Oxalethylpropylin-----	$C_7 H_{12} N_2$ -----	.9813 -----	"-----
Oxalpropylethylin-----	"-----	.9641 -----	"-----
Oxalpropylpropylin-----	$C_8 H_{14} N_2$ -----	.9520 -----	Wallach and Schulze. Ber. 14, 424.
"-----	"-----	.951 -----	Radziszewski. Ber. 16, 487.
Amylglyoxalin-----	"-----	.940, 18°-----	Wallach. Ber. 15, 651.
Oxalethylisoamylin-----	$C_9 H_{16} N_2$ -----	.9291, 19° 6'-----	Radziszewski and Szul. Ber. 17, 1291.
Oxalpropylisoamylin-----	$C_{10} H_{18} N_2$ -----	.9149, 18°-----	"-----
Oxalisobutylisoamylin-----	$C_{11} H_{20} N_2$ -----	.9048, 16° 1'-----	"-----
Oxalisomyliisoamylin-----	$C_{12} H_{22} N_2$ -----	.9029, 19°-----	"-----

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Oxalmethyloanthrylin .	$C_{10} H_{18} N_2$ -----	.9282, 16° .5	Kurez. Ber. 20, ref. 474
Oxalethylanthrylin .	$C_{11} H_{20} N_2$ -----	.9210, 16° .5	" "
Oxalpropyloanthrylin .	$C_{12} H_{22} N_2$ -----	.9192, 17°	" "
Benzonitril .	$C_6 H_5 \cdot C N$ -----	1.0073, 15°	Fehling. A. C. P. 49, 91.
"	"	1.0230, 0°	Kopp. A. C. P. 98.
"	"	1.0084, 16° .8	367.
"	"	.8330, 192°	Ramsay. J. C. S. 35, 463.
"	"	1.0052, 18°	Gladstone. Ber. 7, 249.
Benzyl cyanide, or <i>α</i> toluid nitril.	$C_7 H_7 \cdot C N$ -----	1.0155, 8°	Radziszewski. Ber. 3, 198.
" " "	"	1.0146, 18°	Hofmann. Ber. 7, 519.
Phenylpropionitril .	$C_8 H_9 \cdot C N$ -----	1.0014, 18°	Hofmann. Ber. 7, 520.
Orthoxylyl cyanide	"	1.0156, 22°	Radziszewski and Wispek. Ber. 18, 1279.
Metoxylyl cyanide .	"	1.0022, 22°	" "
Parsoxylyl cyanide .	"	.9922, 22°	" "
Cumionitril .	$C_9 H_{11} \cdot C N$ -----	.765, 14°	Hofmann. J. 1, 595.
Azobenzene	$C_{12} H_{10} N_2$ -----	1.180	Schroder. Ber. 12, 561.
"	"	1.196	
"	"	1.202	
"	"	1.223	
"	"	.8256, 293°	Ramsay. J. C. S. 35, 463.
Phenyl hydrazin .	$C_6 H_5 \cdot N_2$ -----	1.091, 21°	Fischer. A. C. P. 190, 82.
" " "	"	1.097, 22° .7	Fischer. A. C. P. 236, 198.
Chinaldin .	$C_{10} H_9 N$ -----	1.0646, 20°	Kusel. Ber. 19, 2249.
Piperyl hydrazin .	$C_7 H_{12} N_2$ -----	.9283, 142.6	Knorr. A. C. P. 221, 301.
Diethylaniline azylin .	$C_{20} H_{25} N_4$ -----	1.107, 15° .8	Lippmann and Fleissner. Ber. 16, 1417.
Methyl indol .	$C_9 H_9 N$ -----	1.0707, 0°	Lipp. Ber. 17, 2511.
Cyanoconicine .	$C_9 H_{11} N_2$ -----	.93	E. v. Meyer. B. S. C. 39, 121.
Picramine .	$C_8 H_{11} N$ -----	.9865, 0°	Coninek. C. R. 103, 859.
"Acetylamine. ?"	$C_7 H_9 N$ . ? -----	.975, 15°	Natanson. J. 9, 527.

## XLVIII. COMPOUNDS CONTAINING C, H, N, AND O.

## 1st. Nitrites and Nitrates of the Paraffin Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl nitrite	$C H_3 \cdot N O_2$	.991	Strecker. J. 7, 521.
Ethyl nitrite	$C_2 H_5 \cdot N O_2$	.886, 4°	Dumas and Boullay. Ann. (2), 37, 19.
" "	"	.947, 15°	Liebig. A. C. P. 30, 143.
" "	"	.898	Mohr. J. 7, 561.
" "	"	.900, 15° 5	Brown. J. 9, 575.
Propyl nitrite	$C_3 H_7 \cdot N O_2$	.935, 21°	Cahours. Les Mon- des, 32, 280.
Isopropyl nitrite	"	.856, 0°	Silva. Z. C. 12, 637.
" "	"	.844, 24°	
Isobutyl nitrite	$C_4 H_9 \cdot N O_2$	.89445, 0°	Chapman and Smith. J. C. S. 22, 153.
" "	"	.8771, 16°	
" "	"	.82568, 50°	
Trimethylcarbyl nitrite	"	.8915, 0°	Bertoni. Ber. 19, ref. 98.
Amyl nitrite	$C_5 H_{11} \cdot N O_2$	.8773	Rieckher. J. 1, 699.
" "	"	.9020	Hilger. Am. Ch. 5, 231.
" "	"	.9026	
" "	"	.8734, 21°	Gladstone. Bei. 9, 249.
Dimethylethylcarbyl ni- trite.	"	.9033, 0°	Bertoni. G. C. I. 16, 512.
Octyl nitrite	$C_8 H_{17} \cdot N O_2$	.862, 17°	Eichler. Ber. 12, 1887.
Methylhexylcarbyl nitrite	"	.881, 0°	Bertoni. G. C. I. 16, 512.
Methyl nitrate	$C H_3 \cdot N O_3$	1.182, 20°	Dumas and Peligot. Ann. (2), 58, 39.
Ethyl nitrate	$C_2 H_5 \cdot N O_3$	1.112, 17°	Millon. Ann. (3), 8, 236.
" "	"	1.1322, 0°	Kopp. A. C. P. 98, 367.
" "	"	1.1123, 15° 5	
" "	"	1.0948, 17°	Wittstein. J. 18, 470.
" "	"	.9991, 87°	Ramsay. J. C. S. 35, 463.
" "	"	1.1067, 25°	Gladstone. Bei. 9, 249.
Isopropyl nitrate	$C_3 H_7 \cdot N O_3$	1.054, 0°	Silva. Z. C. 12, 637.
" "	"	1.036, 19°	
Isobutyl nitrate	$C_4 H_9 \cdot N O_3$	1.0384, 0°	Chapman and Smith. J. C. S. 22, 153.
" "	"	1.020, 16°	
Amyl nitrate	$C_5 H_{11} \cdot N O_3$	.902, 22°	Rieckher. J. 1, 699.
" "	"	.994, 10°	Hofmann. J. 1, 699.
" "	"	1.000, 7°—8°	Chapman and Smith. J. 20, 550.
" "	"	.8698, 147°	Schiff. Bei. 9, 559.
Cetyl nitrate	$C_{16} H_{33} \cdot N O_3$	.91	Champion. C. R. 73, 571.

## 2d Nitro-Derivatives of the Paraffin Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Nitromethane	$C_1 H_3 N O_2$	1.0236, 101°.5	Schiff. Ber. 9, 559.
Nitroethane	$C_2 H_5 N O_2$	1.0582, 13°	Meyer and Stuber. Ann. (4), 28, 138.
"	"	.9329, 114°.5	Schiff. Ber. 9, 559.
"	"	1.0550, 18°	Gladstone. Ber. 9, 249.
Nitroheptane	$C_7 H_{15} N O_2$	.9669, 19°	Beilstein and Kur- batow. Ber. 13, 2029.
Dinitroethane	$C_2 H_4 (N O_2)_2$	1.3503, 23°.5	Meer. Ber. 8, 1080.
Dinitropropane	$C_3 H_6 (N O_2)_2$	1.258, 22°.5	Meer. Ber. 8, 1087.
Dinitrobutane	$C_4 H_8 (N O_2)_2$	1.205, 15°	Chancel. Ber. 16, 1495.
Dinitrohexane	$C_6 H_{12} (N O_2)_2$	1.1381, 0°	Chancel. C. R. 100, 601.
"	"	1.1333, 5°	
"	"	1.1284, 10°	
"	"	1.1235, 15°	
"	"	1.1185, 20°	
"	"	1.1135, 25°	
"	"	1.1085, 30°	
"	"	1.1034, 35°	Forcrand. C. R. 88, 975.
"	"	1.0983, 40°	
Ethyl nitroacetate	$C_4 H_7 N O_4$	1.133, 0°	Forcrand. C. R. 88, 975.
Nitrocaprylic acid	$C_8 H_{15} N O_4$	1.096, 18°	Wirz. A. C. P. 104, 289.
Ethyl nitroacrylate	$C_{10} H_{19} N O_4$	1.031, 18°	Wirz. A. C. P. 104, 290.
Nitrosodiethyline	$C_4 H_{10} N_2 O$	.951, 17°.5	Geuther. J. 16, 409.
Nitrosodipropylamine	$C_6 H_{14} N_2 O$	.924, 14°	Siersch. J. 20, 537.
"	"	.931, 0°	Vincent. Ber. 19, ref. 680.
Derivative of nitroethane	$C_5 H_7 N O$	1.0102, 15°	Gotting. A. C. P. 243, 104.
"	$C_6 H_9 N O$	.9750, 15°	" "
"	"	1.0	Sokolow. Ber. 19, ref. 540.

## 3d. Aromatic Nitro-Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Nitrobenzene	$C_6H_5 \cdot N O_2$	1.209, 15°	Mitscherlich. P. A. 31, 625.
"	"	1.2002, 0°	Kopp. A. C. P. 98, 367.
"	"	1.1866, 14°.4	} Regnault. P. A. 62, 50.
"	"	1.2159, 5°-10°	
"	"	1.2107, 10°-15°	
"	"	1.2504, 15°-20°	
"	"	1.206, 20°	Naumann. Ber. 10, 2015.
"	"	1.0210, 220°	Ramsay. J. C. S. 35, 463.
"	"	1.2039, 20°	Brühl. Bei. 4, 780.
"	"	1.1740, 25°.5	} Schall. Ber. 17, 2555.
"	"	1.0851, 116°.2	
"	"	1.2121, 7°.5	Gladstone. Bei. 9, 249.
"	"	1.07134, 150°.7	} Taken at different pressures, each t°. being the boiling point at the pressure observed. Neubek. Z. P. C. 1, 655.
"	"	1.07033, 153°.3	
"	"	1.06276, 158°.4	
"	"	1.04807, 173°.2	
"	"	1.04477, 186°.6	
"	"	1.03246, 189°.4	
"	"	1.03059, 189°.4	
"	"	1.01794, 200°.1	
"	"	1.00846, 207°.3	
"	"	1.00722, 208°.2	
"	"	1.00713, 208°.2	
Dinitrobenzene	$C_6H_4 (N O_2)_2$	1.3690, 98°.1	Schiff. A. C. P. 223, 247.
Nitrotoluene	$C_6H_4 \cdot C H_3 \cdot N O_2$	1.18, 16°.5	Deville. Ann. (3), 3, 175.
"	"	1.1231, 54°	Schiff. A. C. P. 223, 247.
"	"	1.1649, 15°.5	Gladstone. Bei. 9, 249.
Orthonitrotoluene	"	1.162, 23°	} Beilstein and Kuhlberg. A. C. P. 155, 17.
"	"	1.163, 23°.5	
"	"	1.159	} Leeds. Ber. 14, 483.
"	"	1.02509	
"	"	1.02483	} Taken at different pressures, each t°. being the boiling point at the pressure observed. Neubek. Z. P. C. 1, 655.
"	"	.99814, 186°.1	
"	"	.99679, 187°.1	
"	"	.98403	
"	"	.98388	
"	"	.97149, 208°.7	
"	"	.97087, 209°.2	
"	"	.96192	
"	"	.96177	
"	"	.96063	
"	"	.96032	
Metanitrotoluene	"	1.168, 22°	Beilstein and Kuhlberg. J. 22, 403.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Metanitrotoluene	$C_6H_4 \cdot CH_3 \cdot NO_2$	1.01158 ( 171° ) 1.01128 )	Taken at different pressures, each t°, being the boiling point at the pressure observed. Neuback, Z. P. C. 1, 655.
"	"	.98775 ) 194°.	
"	"	.98757 )	
"	"	.97227 ) 207°.8	
"	"	.97189 )	
"	"	.96027 ) 218°.8	
"	"	.96008 )	
"	"	.95099 )	
"	"	.95084 ) 227°	
"	"	.94984, 227°.5	
Paranitrotoluene	"	.94933 ) 228°.5	Taken at different pressures, each t°, being the boiling point at the pressure observed. Neuback, Z. P. C. 1, 655.
		.94914 )	
		1.00668, 177°.5	
		1.00467, 178°.5	
		.98378 ) 201°	
		.98364 )	
		.96842, 213°	
Dinitrotoluene	$C_6H_3 \cdot C H_3 (N O_2)_2$	.95455, 225°	
		.94531 ) 237°.5	
		.94513 )	
		.94342, 239°	
		1.3208, 70°.5	Schiff, A. C. P. 223, 247.
Nitroorthoxylylene	$C_6H_2 (C H_3)_2 N O_2$	1.139, 20°	Jacobsen, Ber. 17, 160
"	"	1.147, 15°	Noelting and Forel, Ber. 18, 2671.
Nitrometaxylylene, 1,3,2	"	1.129, 17°.5	Twilldarow, Z. C. 13, 418
"	"	1.126, 21°.5	Beilstein and Kuhlberg.
"	"	1.112, 15°	Grevingk, Ber. 17, 2430.
"	1,3,4	1.124, 25°	Beilstein and Kuhlberg.
"	"	1.135, 15°	Grevingk, Ber. 17, 2429.
"	"	.98667, 176°	Taken at different pressures, each t°, being the boiling point at the pressure observed. Neuback, Z. P. C. 1, 655.
"	"	.98254, 179°.5	
"	"	.98057, 182°	
"	"	.97535, 186°	
"	"	.95631 ) 206°	
"	"	.95642 )	
"	"	.94078, 218°	
"	"	.92964 ) 233°	
"	"	.92945 )	
"	"	.91794 ) 243°	
Nitroparaxylylene	"	.91823 )	Noelting and Forel, Ber. 18, 2680.
		.91634, 244°	
Nitrocymene	$C_{10}H_{13} \cdot N O_2$	1.0385, 18°	Landolph, C. C. 4, 596.
Dinitrocymene	$C_{10}H_{12} \cdot N O_2$	1.206, 18°.5	"
"	"	1.204, 21°	
Nitronaphthalene	$C_{10}H_7 \cdot N O_2$	1.321 ( 4° )	Schröder, Ber. 12, 1611.
"	"	1.341 )	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Nitronaphthalene -----	$C_{10}H_7.N O_2$ -----	1.2226, 61°.5--	Schiff. A. C. P. 223, 247.
Orthonitrophenol -----	$C_6H_4.O H. N O_2$ ---	1.443 } 4° -- {	Schröder. Ber. 12, 561.
“ -----	“ -----	1.451 } 4° -- {	Schiff. A. C. P. 223, 247.
“ -----	“ -----	1.2945, 45°.2--	Schröder. Ber. 12, 561.
Paranitrophenol -----	“ -----	1.467 } 4° -- {	Schiff. A. C. P. 223, 247.
“ -----	“ -----	1.469 } 4° -- {	Schröder. Ber. 12, 561.
“ -----	“ -----	1.2809, 114° --	Schiff. A. C. P. 223, 247.
Trinitrophenol, or picric acid. -----	$C_6H_2.O H. (N O_2)_3$ ---	1.813 -----	Rüdorff. Ber. 12, 251.
“ “ -----	“ -----	1.750 } 4° -- {	Schröder. Ber. 12, 561.
“ “ -----	“ -----	1.777 } 4° -- {	Schiff. A. C. P. 223, 247.
Methyl orthonitrophenate -----	$C_6H_4.O C H_3. N O_2$ ---	1.268, 20° -----	Post and Mehrrens. Ber. 8, 1552.
Methyl paranitrophenate -----	“ -----	1.233, 20° -----	“ “
Methyl $\alpha$ dinitrophenate -----	$C_6H_3.O C H_3. (N O_2)_2$ ---	1.341, 20° -----	“ “
Methyl $\beta$ dinitrophenate -----	“ -----	1.319, 20° -----	“ “
Methyl trinitrophenate -----	$C_6H_2.O C H_3. (N O_2)_3$ ---	1.408, 20° -----	“ “
Orthonitrobenzoic acid -----	$C_6H_4.C O O H. N O_2$ ---	1.5588 -----	Post and Frerichs. Ber. 8, 1549.
“ “ -----	“ -----	1.574 } 4° -- {	Schröder. Ber. 12, 1611.
“ “ -----	“ -----	1.576 } 4° -- {	Schiff. A. C. P. 223, 247.
Metanitrobenzoic acid -----	“ -----	1.4721 -----	Post and Frerichs. Ber. 8, 1549.
“ “ -----	“ -----	1.492 } 4° -- {	Schröder. Ber. 12, 1611.
“ “ -----	“ -----	1.496 } 4° -- {	Schiff. A. C. P. 223, 247.
Paranitrobenzoic acid -----	“ -----	1.5804 -----	Post and Frerichs. Ber. 8, 1549.
Nitroanisol -----	$C_6H_4.O C H_3. N O_2$ ---	1.249, 26° -----	Brunck. J. 20, 619.
Orthonitroisobutylanisol -----	$C_6H_4.O C_4H_9. N O_2$ ---	1.1046, 20° -----	Riess. Z. C. 14, 39.
Paranitroisobutylanisol -----	“ -----	1.1361, 20° -----	“ “
Metanitriline -----	$C_6H_4.H_2 N. N O_2$ ---	1.430, 4° -----	Schröder. Ber. 12, 561.
Paranitriline -----	“ -----	1.415 } 4° -- {	“ “
“ -----	“ -----	1.433 } 4° -- {	“ “

## 4th. Miscellaneous Nitrates, Nitrites, and Nitro-Compounds

NAME.	FORMULA.	SP. GRAVITY	AUTHORITY
Allyl nitrite	$C_3H_5 \cdot N \cdot O_2$	.9546, 0°	Bertoni, G. C. I. 15, 368.
Allyl nitrate	$C_3H_5 \cdot N \cdot O_3$	1.09, 10°	Henry, B. S. C. 18, 232.
Ethylene nitrosnitrate	$C_2H_4 \cdot N \cdot O_2 \cdot N \cdot O_3$	1.472	Kekulé, Ber. 2, 329.
Ethylene mononitrate	$C_2H_4 \cdot O \cdot H \cdot N \cdot O_3$	1.31, 11°	Henry, Ann. 14, 27, 243.
Ethylene dinitrate	$C_2H_4 \cdot (N \cdot O_3)_2$	1.4837, 8°	" "
"	"	1.48	Champion, Z. C. 14, 470.
<i>a</i> Propylene dinitrite	$C_3H_6 \cdot N \cdot O_2 \cdot \frac{1}{2}$	1.14, 0°	Bertoni, G. C. I. 14, 512.
Propylene dinitrate	$C_3H_6 \cdot N \cdot O_3 \cdot \frac{1}{2}$	1.335, 5°	Henry, Ann. 14, 27, 243.
Ethylene acetnitrate	$C_2H_4 \cdot C_2H_3O_2 \cdot N \cdot O_3$	1.29, 18°	" "
Glyceryl trinitrite	$C_3H_5 \cdot N \cdot O_2 \cdot \frac{3}{2}$	1.294, 15° 5'	Masson, Ber. 16, 1699.
Nitroacetic acid	$C_2H_3 \cdot N \cdot O_3$	1.35, 12° 8'	Henry, Ann. 14, 28, 115.
Ethyl nitroglycollate	$C_4H_7 \cdot N \cdot O_3$	1.2112, 15° 2'	" "
Ethyl nitrolactate	$C_4H_7 \cdot N \cdot O_3$	1.1534, 13°	" "
Ethyl nitromalonate	$C_5H_9 \cdot N \cdot O_3$	1.149, 15°	Conrad and Bischoff, Ber. 13, 599.
Ethyl nitrotartrate	$C_5H_9 \cdot N \cdot O_3$	1.2778, 16°	Henry, Ann. 14, 28, 415.
Ethyl nitromalate	$C_4H_7 \cdot N \cdot O_3$	1.2094, 16°	" "
Nitroglycerine	$C_3H_5 \cdot N_3 \cdot O_9$	1.595 (1.59°)	De Vrij, J. 8, 626.
"	"	1.600	"
"	"	1.5958	Liehe, J. 13, 453.
"	"	1.60	Sobrero, J. 13, 453.
"	"	1.60	Champion, Z. C. 14, 350.
"	"	1.6, 15°	Kern, C. N. 31, 153.
"	"	1.555, 8°	Beckerhins, J. R. C. 4, 118.
"	"	1.599, 1	"
"	"	1.601, 11° 5'	Hay and Masson, J. C. S. 48, 742.
Nitromannite	$C_6H_7 \cdot N_6 \cdot O_{18}$	1.901, 0°, crist.	"
"	"	1.446	"
"	"	1.504 fused	Sokoloff, Ber. 12, 698.
"	"	1.537	"
Trinitrolactose	$C_{12}H_{17} \cdot N \cdot O_{17}$	1.476, 0°	Gé, Ber. 15, 2239.
Pentanitrolactose	$C_{12}H_{17} \cdot N \cdot O_{17}$	1.684, 0°	" "
Acetonitrose	$C_{11}H_{13} \cdot N \cdot O_3$	1.3187, 18°	Colley, B. S. C. 19, 404.
Acetoethyl nitrate	$C_6H_{11} \cdot N_2 \cdot O_7$	1.0451, 19°	Nadler, J. 13, 403.
Derivative of menthol	$C_{10}H_{17} \cdot N \cdot O_2$	1.061, 15°	Moriva, J. C. S. 49, 77.

## 5th. Miscellaneous Amido-Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethylhydroxylamine	$N H_2 O H, C_2 H_5$	.8827, 7°.5	Gürke. Ber. 14, 258.
Ethylenediamine hydrate	$(N H_2)_2 C_2 H_4, H_2 O$	.970, 15°	Rhousopolos and Meyer. J. C. S. 42, 940.
Oxypropylpropylamine	$N H, C_3 H_7, C_3 H_6 O H$	.9018, 18°	Liebermann and Paal. Ber. 16, 523.
Oxyisoamylamine	$N H_2, C_5 H_{11} O$	.9265, 14°	Radziszewski and Schramm. Ber. 17, 838.
Dioxyisoamylamine	$N H, (C_5 H_{11} O)_2$	.9500, 14°	" "
Trioxamylamine	$N (C_5 H_{11} O)_3$	.879, 22°	J. Erdmann. J. 17, 419.
Formamide	$N H_2, C O H$	1.1462, 19°	Gladstone. Bei. 9, 249.
Methylformamide	$N H, C H_3, C O H$	1.011, 19°	Linnemann. J. 22, 601.
Ethylformamide	$N H, C_2 H_5, C O H$	.967, 2°	Wurtz. J. 7, 567.
"	"	.952, 21°	Linnemann. J. 22, 602.
Diethylformamide	$N (C_2 H_5)_2, C O H$	.908, 19°	" "
Acetamide	$N H_2, C_2 H_3 O$	1.11 } 14°	Mendius. B. D. Z.
"	"	1.13 }	
"	"	1.159, 4°	Schröder. Ber. 12, 561.
Ethylacetamide	$N H, C_2 H_5, C_2 H_3 O$	.942, 4°.5	Wurtz. J. 7, 566.
Ethylidiacetamide	$N, C_2 H_3, (C_2 H_3 O)_2$	1.0092, 20°	Wurtz. Ann. (2), 42, 55.
Dimethylacetamide	$N (C H_3)_2, C_2 H_3 O$	.9405, 20°	Franchimont. R. T. C. 2, 329.
Diethylacetamide	$N, (C_2 H_5)_2, C_2 H_3 O$	.9248, 8°.5	Wallach and Kamensky. A. C. P. 214, 235.
Propionamide	$N H_2, C_3 H_5 O$	1.030 }	Schröder. Ber. 12, 561.
"	"	1.037 }	
Amidoacetic acid, or glycocoll.	$C_2 H_5 N O_2$	1.1607	Curtius. B. S. C. 39, 169.
Ethyl diethylglycocollate	$C_8 H_{17} N O_2$	.919, 15°	Kraut. J. R. C. 4, 198.
Amidocaproic acid, or leucine.	$C_6 H_{13} N O_2$	1.293, 18°	Engel and Vilmain. B. S. C. 24, 279.
" " "	"	1.282	Lippmann. Ber. 17, 2837.
Oxamide	$C_2 H_4 N_2 O_4$	1.627 }	Schröder. Ber. 12, 561.
"	"	1.657 }	
"	"	1.667 }	
Dimethyloxamide	$C_4 H_8 N_2 O_2$	1.281 }	Schröder. Ber. 12, 1611.
"	"	1.307 }	
Diethyloxamide	$C_6 H_{12} N_2 O_2$	1.164 }	" "
"	"	1.173 }	
Asparagine	$C_4 H_8 N_2 O_3, H_2 O$	1.519, 14°	Watts' Dictionary.
"	"	1.552	Rüdorff. Ber. 12, 252.
Amidosuccinic, or aspartic acid.	$C_4 H_7 N O_4$	1.6613, active.	} Pasteur. J. 4, 389.
"	"	1.6632, inactive	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Allysuccinimide	$C_7 H_9 N O_2$	1.1543, 0°	Moine, J. C. S. 52, 489.
"	"	1.1432, 12°	
"	"	1.1112, 50°	
"	"	1.0677, 100°	
Ethyl amidooacetate	$C_6 H_{11} N O_2$	1.014, 30°	Duisberg, Ber. 15, 1386.
Ethylamidopropiopropionate.	$C_8 H_{15} N O_2$	0.9774, 15°	Israel, A. C. P. 231, 197.
Mucamide	$C_6 H_{12} N_2 O_6$	1.589, 13°·5	Madaguti, C. R. 22, 854.
Benzamide	$N H_2 \cdot C_6 H_5 O$	1.338	Schroder, Ber. 12, 1611.
"	"	1.344	
Amidobenzoic acid	$N H_2 \cdot C_6 H_5 O_2$	1.506	" "
"	"	1.515	
Amidomethylphenol	$C_7 H_9 N O$	1.108, 26°	Brunck, J. 20, 620.
Dimethylanisidine	$C_9 H_{13} N O$	1.016, 23°	Muhlhauser, A. C. P. 207, 249.
Ethyl orthoamidophenetol	$C_{10} H_{15} N O$	1.021, 18°·3	Forster, J. P. C. (2), 21, 347.
Methylformanilide	$C_8 H_9 N O$	1.097, 18°	Pictet and Crépiaux, Ber. 21, 1106.
Ethylformanilide	$C_9 H_{11} N O$	1.093, 16°	" "
Propylformanilide	$C_{10} H_{13} N O$	1.044, 16°	" "
Isoamylformanilide	$C_{12} H_{17} N O$	1.004, 16°	" "
Acetanilide	$C_8 H_9 N O$	1.099, 10°·5	Williams, J. 17, 424.
"	"	1.205	Schroder, Ber. 12, 1611.
"	"	1.216	
Benzanilide	$C_{13} H_{11} N O$	1.306	" "
"	"	1.321	
Oxetheniline	$C_8 H_{11} N O_2$	1.11, 0°	Demole, J. C. S. (2), 12, 77.
$\alpha$ Ethylbenzhydroxamic acid.	$C_9 H_{11} N O_2$	1.209	Gurke, Ber. 14, 258.
$\beta$ Ethylbenzhydroxamic acid.	"	1.185	Gurke, Ber. 14, 259.
Ethyl ethylbenzhydroxamate.	$C_{11} H_{13} N O_2$	1.0258, 17°	Gurke, Ber. 14, 257.
Ethyl $\alpha$ dibenzhydroxamate.	$C_{16} H_{15} N O_3$	1.2433, 18°·4	Gurke, Ber. 14, 258.
Ethyl $\beta$ dibenzhydroxamate	"	1.2395, 18°·4	" "
Tyrosine	$C_9 H_{11} N O_3$	1.456	Siber, Ber. 17, 2837.
Carbamide, or urea	$C H_4 N_2 O$	1.35	Proust.
"	"	1.30, 12°	Bodeker, B. D. Z.
"	"	1.35	Schabus.
"	"	1.323	Schroder, Ber. 12, 561.
"	"	1.333	
Ethyl carbamide	$C_7 H_8 N_2 O$	1.209	(Two samples, Lenckart J. P. C. (2), 21, 11.
"	"	1.213, 18°	
Diethyl carbamide.	$C H_{12} N_2 O$	1.040	Schroder, Ber. 13, 1070.
"	"	1.043	
Benzyl phenyl carbamide	$C_{14} H_{15} N_2 O$	0.9168, 18°	Gladstone, Sci. 9, 249.
Ethyl carbamate, or urethane	$C H_7 N O_2$	0.9862, 21°	Wurtz, J. 7, 565.

## 6th. Miscellaneous Cyanogen Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl cyanate -----	$C_2 H_5. C N O$ -----	1.1271, 15° -----	Cloëz. J. 10, 386.
Tertiary butyl cyanate ---	$C_4 H_9. C N O$ -----	.8676, 0° -----	Brauner. Ber. 12, 1875.
Cyanaldehyde -----	$C_2 H_3 O C N$ -----	.881, 15° -----	Chantard. C. R. 106, 1168.
Ethyl cyanformate -----	$C_4 H_5 N O_2$ -----	1.0139, 13°.5 -----	Henry. C. R. 102, 768.
Ethyl cyanacetate -----	$C_5 H_7 N O_2$ -----	1.0664, 13°.5 -----	" "
Diisobutyl dicyanide ---	$C_{10} H_{11} N_2 O_2$ -----	.96 -----	Moritz. J. C. S. 40, 13.
Ethylene cyanhydrin ---	$C_2 H_4. O H. C N$ -----	1.0588, 0° -----	Erlenmeyer. A. C. P. 191, 276.
Ethyl acetylcyanacetate --	$C_7 H_9 N O_3$ -----	1.102, 19° -----	Haller and Held. Ber. 15, 2363.
Ethyl methylacetylcyanacetate.	$C_8 H_{11} N O_3$ -----	.996, 20° -----	Held. B. S. C. 41, 330.
Ethyl ethylacetylcyanacetate.	$C_9 H_{13} N O_3$ -----	.976, 20° -----	" "
Ethoxyacetonitril -----	$C_4 H_7 N O$ -----	.918, 6° -----	Henry. B. S. C. 20, 186.
" -----	" -----	.9093, 20° -----	Norton and Tscherniak.
Phenoxyacetonitril -----	$C_8 H_7 N O$ -----	1.09, 17°.5 -----	Fritzsche. Ber. 12, 2178.
Mandelic nitril -----	" -----	1.124 -----	Völkel. P. A. 62, 444.
Hydroxisovaleronitril ---	$C_5 H_9 N O$ -----	.95612, 0° -----	Lipp. A. C. P. 205, 26.
Hydroxycaprylonitril ---	$C_8 H_{15} N O$ -----	.9048, 17° -----	Erlenmeyer and Sigel. A. C. P. 177, 107.
Triethoxyacetonitril -----	$C_8 H_{15} N O_3$ -----	1.0030, 15°.5 -----	Bauer. A. C. P. 229, 163.
Valeracetonitril -----	$C_{13} H_{24} N_2 O_3$ -----	.79 -----	Schlieper. A. C. P. 49, 19.
Acetoxyacetonitril -----	$C_4 H_5 N O_2$ -----	1.1003, 13°.5 -----	Henry. C. R. 102, 768.
Acetoxypionitril -----	$C_5 H_7 N O_2$ -----	1.077, 13°.5 -----	" "
Cyanöl -----	$C_6 H_{11} N O$ -----	1.009 -----	Rossignon. A. C. P. 44, 301.

## 7th. Miscellaneous Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl carbimide	$C_3H_5NO$	1.8981	Wortz. J. 7, 561.
Phenyl carbimide	$C_7H_5NO$	1.092, 50°	Hofmann. P. R. S. 19, 108.
Ethylmethyl acetoxim	$C_5H_9NO$	0.915, 24°	Janny. Ber. 15, 2770.
Trimethylene diethylalkin	$C_7H_{12}NO$	0.9199, 4°	Berend. Ber. 17, 510.
Tetraethylallylalkin	$C_{11}H_{26}N_2O$	0.9002, 4°	" "
Methylphenylethylalkin	$C_9H_{13}NO$	1.08065, 0°	Laun. Ber. 17, 676.
Piperpropylalkin	$C_8H_{17}NO$	0.9456, 0°	Laun. Ber. 17, 680.
Hydroxypicoline	$C_8H_9NO$	1.008, 13°	Etard. J. C. S. 40, 1046.
Collidine monocarbonic ether.	$C_{11}H_{15}NO_2$	1.0315, 15°	R. Michael. A. C. P. 225, 121.
Collidine dicarbonic ether	$C_{14}H_{19}NO_4$	1.087, 15°	Hantzsch. Ber. 15, 2913.
Nitroxylpiperidine	$C_5H_{13}N_2O$	1.0659, 15°	Wertheim. J. 16, 410.
Acetpiperidid	$C_7H_{13}NO$	1.01106, 9°	Wallach and Kamensky. A. C. P. 214, 238.
Acetylcephellidine	$C_{10}H_{19}NO$	0.9787, 0°	Durkopff. Ber. 18, 924.
Parachinanisol	$C_{10}H_{19}NO$	1.1655, 0°	Skrup. Ber. 18, ref. 631.
"	"	1.1442, 20°	
"	"	1.1102, 50°	Wallach and Kamensky. A. C. P. 214, 245.
Base from ethylaminecamphorate.	$C_{14}H_{21}N_2O$	1.0177, 15°	
Uric acid	$C_5H_4N_4O_3$	1.855	Schroder. Ber. 13, 1070.
"	"	1.893	
Hippuric acid	$C_9H_7NO_3$	1.308	Schabus. J. 3, 410.
Ethyl hippurate	$C_{11}H_{15}NO_3$	1.043, 23°	Stenhouse. A. C. P. 31, 148.
Ethyl glycocholate	$C_{25}H_{47}NO_6$	0.901	Springer. A. C. J. 1, 181.
Indogotine	$C_{16}H_{15}NO_2$	1.35	Weltzien's "Zusammenstellung."
Cocaine hydrate	$C_{17}H_{21}NO_4 \cdot H_2O$	1.34	Watts' Dictionary.
"	"	1.35	
Cocaine	$C_{17}H_{21}NO_4$	1.23, 19°	Pfaff. Watts' Dict.
Piperine	$C_{17}H_{19}NO_3$	1.0941, 18°	Wageneröder. Watts' Dict.
Strychnine	$C_{21}H_{33}N_2O_2$	1.359, 18°	F. W. Clarke.
"	"	1.43	Blunt. J. C. S. 50, 1047.
Morphine	$C_{17}H_{19}NO_3 \cdot H_2O$	1.317	Schroder. Ber. 13, 1070.
"	"	1.326	
Morphine lactate	$C_{21}H_{27}NO_5$	1.215, 13°	Dechermé. J. 16, 415.
Morphine oxalate	$C_{19}H_{21}N_2O_7 \cdot 2H_2O$	1.286, 15°	" "
Morphine lactate	$C_{20}H_{25}NO_5$	1.3574	" "
Cocaine	$C_{15}H_{21}NO_3 \cdot N_2O$	1.200	Hunt. J. 8, 566.
"	"	1.311	Schroder. Ber. 13, 1070.
"	"	1.323	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Thebaine -----	$C_{19}H_{21}NO_3$ -----	1.282 -----	Schröder. Ber. 13, 1070.
" -----	" -----	1.305 -----	
Landanine -----	$C_{20}H_{25}NO_4$ -----	1.255 -----	" "
" -----	" -----	1.256 -----	
Papaverine -----	$C_{21}H_{21}NO_4$ -----	1.308 -----	" "
" -----	" -----	1.317 -----	
" -----	" -----	1.337 -----	" "
Cryptopine -----	$C_{21}H_{23}NO_5$ -----	1.351 -----	
Narcotine -----	$C_{22}H_{23}NO_7$ -----	1.374 -----	" "
" -----	" -----	1.391 -----	
" -----	" -----	1.395 -----	Tanret. Ber. 13, 1031.
Pelletierine -----	$C_8H_{15}NO$ -----	.988, 0° -----	
Paraffinic acid -----	$C_{13}H_{26}NO_5$ -----	1.14, 15° -----	Champion and Pel- let. B.S.C. 18, 247.

## XLIX. CHLORIDES, BROMIDES, AND IODIDES OF CARBON.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Carbon tetrachloride -----	$CCl_4$ -----	1.599 -----	Regnault. Ann. (2), 71, 383.
" " -----	" -----	1.56 -----	Kolbe. A. C. P. 54, 146.
" " -----	" -----	1.62983, 0° -----	Pierre. Ann. (3), 33, 210.
" " -----	" -----	1.567, 12° -----	Riche.
" " -----	" -----	1.5947, 20° -----	Haagen. P. A. 131, 117.
" " -----	" -----	1.4658, at the boiling p't.	Ramsay. J. C. S. 35, 463.
" " -----	" -----	1.63195, 0° -----	} Thorpe. J. C. S. 37, 199.
" " -----	" -----	1.47999, 76°.74 -----	
" " -----	" -----	1.6084, 9°.5 -----	} Schiff. G. C. I. 13, 177.
" " -----	" -----	1.4802, 75°.6 -----	
" " -----	" -----	1.60500, 15° -----	} Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	1.58873, 25° -----	
Tetrachlorethylene -----	$C_2Cl_4$ -----	1.619, 20° -----	Regnault. Ann. (2), 71, 353.
" -----	" -----	1.6490, 0° -----	Pierre. Ann. (3), 33, 230.
" -----	" -----	1.612, 10° -----	Geuther. A. C. P. 107, 212.
" -----	" -----	1.6595, 0° -----	Bourgoin. Ber. 8, 548.
" -----	" -----	1.6190, 20° -----	Brühl. Bei. 4, 780.
" -----	" -----	1.6312, 9°.4 -----	} Schiff. G. C. I. 13, 177.
" -----	" -----	1.4434 -----	
" -----	" -----	1.4489 -----	} 120° -----
Hexachlorethane -----	$C_2Cl_6$ -----	1.619 -----	Regnault. Ann. (2), 71, 374.
" -----	" -----	2.011 -----	Schröder. Ber. 13, 1070.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Octachloropropane .....	$C_3Cl_8$ .....	1.860 .....	Cahours, J. 3, 496.
Hexachlorobenzene .....	$C_6Cl_6$ .....	1.585, 228 .....	Jungfleisch, J. 20,
" .....	" .....	1.437, 317 .....	36.
" .....	" .....	1.569, 236 .....	M., 226°, B., 326°.
" .....	" .....	1.5191, 266° .....	Jungfleisch, J. 21,
" .....	" .....	1.4624, 306° .....	354.
Trichloroethyl chloride .....	$C_2Cl_3Cl_2$ .....	1.46 .....	Kolbe, A. C. P. 45,
" .....	" .....	1.5438, 0° .....	11.
" .....	" .....	1.5339, 11° .....	Clässon, Lund
" .....	" .....	1.5241, 17° .....	Årsskrift 1884, 5.
" .....	" .....	1.05085, 15° .....	Billetet and Strohl,
Carbon tetrabromide ....	$CBr_4$ .....	3.42, 14 .....	Ber. 21, 102.
Carbon sulphobromide .....	$CS_2Br_4$ .....	2.88, 15 .....	Bolas and Groves,
Bromotrichloromethane .....	$CCl_3Br$ .....	2.058, 0 .....	J. C. S. 24, 780.
" .....	" .....	2.017, 10° .....	Hell and Urech,
" .....	" .....	1.842, 100 .....	Ber. 16, 1118.
" .....	" .....	2.05196, 0° .....	Paterno, J. P. C. (2),
" .....	" .....	4.82446, 104° .....	5, 99.
Dibromotetrachlorthane .....	$C_2Cl_4Br_2$ .....	2.3, 21° .....	Thorpe, J. C. S. 37,
Dibromohexachlorpropane .....	$C_3Cl_6Br_2$ .....	1.974 .....	371.
Carbon tetriodide .....	$CI_4$ .....	4.32, 20° .....	Malaguti, Ann. (3),
			16, 24.
			Cahours,
			Gustavson, C. R. 78,
			1126.

## L. COMPOUNDS CONTAINING C, CL, AND O.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Carbonyl chloride .....	$COCl_2$ .....	1.432, 0 .....	(Emmerling and
" .....	" .....	1.392, 18° .....	Lengyel, Z. C.
Trichloroethyl chloride .....	$C_2Cl_3O$ .....	1.693, 18 .....	13, 189.
" .....	" .....	1.654, 0° .....	Malaguti, Ann. (3),
" .....	" .....	1.44517, 118 .....	16, 9.
Trichloroacetic anhydride .....	$C_4Cl_6O$ .....	1.908, 20 .....	(Thorpe, J. C. S.
Tetrachloromethyl formate .....	$C_2Cl_4O$ .....	1.724, 12 .....	37, 371.
" .....	" .....	1.625, 11 .....	Anthoine, J. Ph.
Hexafluoroethyl formate .....	$C_2F_6O$ .....	1.705, 18 .....	Ch. (5), 8, 417.
Heptachloroethyl acetate .....	$C_4Cl_7O$ .....	1.991, 18 .....	Cahours, J. 1, 676.
Pentachloroethyl acetate .....	$C_4Cl_5O$ .....	1.79, 25 .....	Hentschel, J. P. C.
" .....	" .....	1.78, 22 .....	(2), 36, 99.
			Cleez, Ann. (3), 17,
			269.
			Cleez, Ann. (3), 17,
			312.
			Leblanc, Ann. (3),
			10, 202.
			Leblanc, Ann. (3),
			10, 208.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Hexchlormethyl oxide	$C_2 Cl_6 O$	1.594	Regnault. Ann. (2), 71, 403.
Perchlurethyl oxide	$C_4 Cl_{10} O$	1.9, 14°.5	Malaguti. Ann. (3), 16, 14.
Hexchloraectone	$C_3 Cl_6 O$	1.75, 10°	Plantamour.
"	"	1.744, 12°	Clœz. Ann. (6), 9, 145.
Chloroxethose	$C_4 Cl_6 O$	1.654, 21°	Malaguti. Ann. (3), 16, 20.
Derivative of sodium citrate.	$C_5 Cl_{10} O_2$	1.66	Watts' Dictionary.
By action of $P Cl_5$ on succinyl chloride.	$C_4 Cl_6 O$	1.634	Kœder. J. P. C. (2), 28, 191.

## II. COMPOUNDS CONTAINING C, H, AND CL.

### 1st. Chlorides of the Paraffin Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl chloride	$C H_3 Cl$	.99145, 25°.7	Vincent and Delachanal. Bei. 3, 332.
"	"	.95231, 0°	
"	"	.92880, 13°.4	
"	"	.91969, 17°.9	
"	"	.90875, 23°.8	
"	"	.89638, 30°.2	
"	"	.97886, 39°	Thénard.
Ethyl chloride	$C_2 H_5 Cl$	.874, 5°	
"	"	.92138, 0°	
"	"	.9253, 0°	
"	"	.9176, 8°	
"	"	.8510, 12°	
"	"	.92295, 15°	Ramsay. J. C. S. 35, 463.
"	"	.91708, 25°	
Propyl chloride	$C_3 H_7 Cl$	.9156, 0°	Perkin. J. P. C. (2), 31, 481.
"	"	.8918, 19°.75	
"	"	.8671, 39°	Pierre and Puchot. Ann. (4), 22, 281.
"	"	.9160, 18°	
"	"	.8959, 19°	Linnemann. A.C.P. 161, 38 and 39.
"	"	.8877, 14°	
"	"	.9123, 0°	De Heen. Bei. 5, 105.
"	"	.8536, 46°.5	
"	"	.8561, 46°	Zander. A.C.P. 214, 181.
"	"		
"	"		Schiff. G. C. I. 13, 177.
"	"		
"	"	.8898, 20°	Brühl. Bei. 4, 778.
"	"	.89296, 15°	
"	"	.88125, 25°	Perkin. J. P. C. (2), 31, 481.
"	"		
Isopropyl chloride	"	.874, 10°	Linnemann.
"	"	.8722, 14°	
			Linnemann. A. C. P. 161, 18.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isopropyl chloride	$C_3H_7Cl$	.8825, 0°	Zander, A.C.P. 214,
" "	"	.8826, 36° 5	181.
" "	"	.86884, 15°	Perkin, J. P. C. (2,
" "	"	.85750, 25°	31, 481.
Butyl chloride	$C_4H_9Cl$	.880	Gerhard, J. 15, 409.
" "	"	.9074, 0°	Lieben and Rossi.
" "	"	.8874, 20°	A. C. P. 158, 137.
" "	"	.8972, 14°	Linnemann, Ann.
" "	"		(4), 27, 268.
" "	"	.8094, bp	Ramsay, J. C. S.
" "	"		35, 463.
" "	"	.8794, 14°	DeHeen, Bei. 5, 105.
Isobutyl chloride	"	.8953, 0°	
" "	"	.8651, 27° 8	Pierre and Puchot,
" "	"	.8281, 59°	Ann. (4), 22, 310.
" "	"	.8798, 15°	Linnemann, A. C.
" "	"		P. 162, 1.
" "	"	.8626, 19°	Gladstone, Bei. 9,
" "	"		249.
" "	"	.8073, 68°	Schiff, Bei. 9, 559.
" "	"	.88356, 15°	Perkin, J. P. C.
" "	"	.87363, 25°	(2), 31, 481.
Trimethylearhyl chloride	"	.8658, 0°	Puchot, Ann. (5),
" "	"		28, 549.
" "	"	.84712, 15°	Perkin, J. P. C.
" "	"	.83683, 25°	(2), 31, 481.
Normal pentyl chloride	$C_5H_{11}Cl$	.9013, 0°	
" "	"	.8834, 20°	Lieben and Rossi.
" "	"	.8680, 40°	A. C. P. 159, 70.
" "	"	.8732, 20°	Lachowicz, A. C. P.
" "	"		220, 191.
Amyl chloride	"	.8859, 0°	Kopp, A. C. P. 95,
" "	"	.8625, 25° 1	307.
" "	"	.89584, 0°	Pierre, C. R. 27, 213.
" "	"	.8750	(Two products,
" "	"	.8777	Schorlemmer, J.
" "	"		(19, 527.
" "	"	.7801, bp	Ramsay, J. S. C.
" "	"		35, 463.
" "	"	.8716, 14°	DeHeen, Bei. 5, 105.
" "	"	.8703, 20°	Lachowicz, A. C. P.
" "	"		220, 190.
" "	"	.7903, 99° 5	Schiff, Ber. 19, 560.
" "	"	.88006, 15°	Perkin, J. P. C.
" "	"	.87164, 25°	(2), 31, 481.
" "	Active	.886	Le Bel, B. S. C. 25,
" "			546.
" "	Inactive	.8928, 0°	Balbiano, Ber. 9,
" "			1437.
Methylpropylarhyl chloride	"	.912, 0°	(Wagner and Saytze-
" "	"	.891, 21°	eff. A. C. P. 179,
" "	"		321.
Diethylarhyl chloride	"	.916, 0°	" "
" "	"	.895, 21°	" "
Dimethylethylarhyl chloride	"	.883, 0°	Wurtz, J. 16, 516.
" "	"	.880, 0°	(Wischegradsky,
" "	"	.870, 19°	A. C. P. 190, 334-
" "	"		336.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dimethylethylcarbyl chloride. " "	$C_5 H_{11} Cl$ -----	.87086, 15°	Perkin. J. P. C. (2), 31, 481.
Hexyl chloride -----	$C_6 H_{13} Cl$ -----	.86219, 25°	
" " -----	" -----	.892, 16° -----	Pelouze and Cahours. J. 16, 525.
" " -----	" -----	.892, 23° -----	Geibel and Buff. J. 21, 336.
" " -----	" -----	.895, 13° -----	Cahours and Demarcay. C. R. 80, 1570.
Secondary hexyl chloride.	" -----	.871, 24° -----	Domac. Ber. 14, 1712.
Chloride from tetraethylethane. " "	" -----	.8943, 14° -----	Schorlemmer. J. 20, 567.
" " " " " "	" -----	.8874, 22° -----	
" " " " " "	" -----	.8759, 34° -----	
Dimethylisopropylcarbyl chloride. " "	" -----	.8966, 0° -----	Pawlow. A. C. P. 196, 122.
Pinacetyl chloride -----	" -----	.8784, 19° -----	Friedel and Silva. J. C. S. (2), 11, 488.
		.8991, 0° -----	
Heptyl chloride -----	$C_7 H_{15} Cl$ -----	.9983, 15° -----	Petersen. J. 14, 613.
" " -----	" -----	.890, 20° -----	Pelouze and Cahours. J. 15, 386.
" " -----	" -----	.8737, 18°.5	Two preparations. Schorlemmer. A. C. P. 136, 257.
" " -----	" -----	.8725, 20° -----	
" " -----	" -----	.8965, 19° -----	
" " -----	" -----	.891, 19° -----	Schorlemmer.
" " -----	" -----	.881, 16° -----	Cross. J. C. S. 32, 123.
Isoheptyl chloride -----	" -----	.8814, 16°.5	Schorlemmer. A. C. P. 136, 257.
" " -----	" -----	.8780, 18°.5	
" " -----	" -----	.8757, 22° -----	
Octyl chloride -----	$C_8 H_{17} Cl$ -----	.892, 18° -----	Schorlemmer. J. 15, 386.
" " -----	" -----	.895, 16° -----	Pelouze and Cahours. J. 16, 528.
" " -----	" -----	.8802, 16° -----	Zincke. A. C. P. 152, 5.
" " -----	" -----	.850 -----	Cahours and Demarcay. C. R. 80, 1571.
" " -----	" -----	.87857, 15°	Perkin. J. P. C. (2), 31, 481.
" " -----	" -----	.87192, 25°	
Isooctyl chloride -----	" -----	.8834, 10°.5	Schorlemmer. J. 20, 567.
" " -----	" -----	.8617, 36° -----	Perkin. J. P. C. (2), 31, 481.
Methylhexylcarbyl chloride. " "	" -----	.87075, 15° -----	
" " " " " "	" -----	.86388, 25° -----	Pelouze and Cahours. J. 16, 529.
Nonyl chloride. B. 196°	$C_9 H_{19} Cl$ -----	.899, 16° -----	
" " -----	" -----	.8962, 14° -----	Thorpe and Young. A. C. P. 165, 1.
" " B. 182°	" -----	.911, 23° -----	Lemoine. B. S. C. 41, 161.
" " -----	" -----	.908, 25°.8 -----	
Decetyl chloride -----	$C_{10} H_{21} Cl$ -----	.908, 19° -----	" "
Dodecetyl chloride -----	$C_{12} H_{25} Cl$ -----	.933, 22° -----	Pelouze and Cahours. J. 16, 530.
Cetyl chloride -----	$C_{16} H_{33} Cl$ -----	.8412, 12° -----	Tüttcheff. J. 13, 406.

2d Chlorides of the Series  $C_n H_{2n} Cl_2$ 

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methylene chloride	$C H_2 Cl_2$	1.344, 18°	Regnault, Ann., 2, 71, 378.
"	"	1.369, 0°	Butterow, J., 22, 343.
"	"	1.377765, 0	Thorp, J. C. S., 37, 371.
"	"	1.36993, 41.56	Perkin, J. P. C., 2, 32, 523.
"	"	1.33771, 15	Regnault, Ann., 2, 58, 307.
"	"	1.3197, 25°	Laëbige, A. C. P., 213.
Ethylene chloride	$C_2 H_4 Cl_2$	1.279, 12°	Pierre, C. R., 27, 213.
"	"	1.247, 18	Haugen, P. A., 131, 117.
"	"	1.28041, 0°	Marmenè, J., 22, 343.
"	"	1.2562, 20°	Gladstone and Tribe, C. N., 26, 212.
"	"	1.272, 14°	Ramsay, J. C. S., 35, 463.
"	"	1.272, 14°	Thorp, J. C. S., 37, 371.
"	"	1.1353, 81	Brühl, A. C. P., 203, 1.
"	"	1.28082, 0°	Schiff, Ber., 15, 2973.
"	"	1.15635, 83.15	Schiff, G. C. I., 13, 177.
"	"	1.2521, 20°	Gladstone and Tribe, C. N., 26, 212.
"	"	1.1576, 83° 2	Brühl, A. C. P., 203, 1.
"	"	1.2356, 93.8	Schiff, Ber., 15, 2973.
"	"	1.1576, 83° 3	Schiff, G. C. I., 13, 177.
"	"	1.272, 14	Gladstone and Tribe, C. N., 26, 212.
"	"	1.25991, 15°	Perkin, J. P. C., 2, 32, 523.
"	"	1.24800, 25°	Regnault, Ann., 2, 71, 378.
"	"	1.25014, 20°	Thorp, J. C. S., 37, 371.
Ethylidene chloride	"	1.171, 17°	Pierre, C. R., 27, 213.
"	"	1.21074, 0°	Gauthier, J., 11, 289.
"	"	1.189, 1.3	Darling, J., 21, 329.
"	"	1.198, 6.15	Gladstone and Tribe, C. N., 26, 212.
"	"	1.201, 13°	Brühl, A. C. P., 203, 1.
"	"	1.1743, 20	Ramsay, J. C. S., 35, 463.
"	"	1.1070, 56°	Two samples.
"	"	1.26394, 0	Thorp, J. C. S., 37, 371.
"	"	1.10923, 56° 9	Thorp, J. C. S., 37, 371.
"	"	1.204, 0	Thorp, J. C. S., 37, 371.
"	"	1.1895, 9.18	Schiff, G. C. I., 13, 177.
"	"	1.11425, 56° 7	Schiff, G. C. I., 13, 177.
"	"	1.11555, 56° 5	Schiff, G. C. I., 13, 177.
"	"	1.18450, 15°	Perkin, J. P. C., 2, 32, 523.
"	"	1.17120, 25°	Regnault, Ann., 2, 58, 307.
"	"	1.17503, 20°	Wegmann, Z. P. C., 2, 218.
Propylene chloride	$C_3 H_6 Cl_2$	1.151	Colbours, J., 3, 426.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Propylene chloride -----	$C_3H_6Cl_2$ -----	1.1656, 14° ---	Linnemann. A. C. P. 161, 18.
“ “ -----	“ -----	1.184, 0° } }	Friedel and Silva. Z. C. 14, 489.
“ “ -----	“ -----	1.155, 25° } }	
“ “ -----	“ -----	1.182, 0° } }	
“ “ -----	“ -----	1.153, 25° } }	
“ “ -----	“ -----	1.0470, 97° .5 } }	
Trimethylene chloride-----	“ -----	1.201, 15° -----	Schiff. Bei. 9, 559. Reboul. J. C. S. 36, 127.
“ “ -----	“ -----	1.1896, 17° .6 -----	Freund. Ber. 14, 2270.
Dimethylmethylen chloride. Methylchloracetol.	“ -----	1.117, 0° -----	Friedel.
“ “ -----	“ -----	1.06, 16° -----	Linnemann. A. C. P. 138, 125.
“ “ -----	“ -----	1.0827, 16° -----	Linnemann. A. C. P. 161, 18.
“ “ -----	“ -----	1.1058, 0° --- } }	Friedel and Silva. Z. C. 14, 489.
“ “ -----	“ -----	1.0744, 25° } }	
“ “ -----	“ -----	1.1125, 0° --- } }	
“ “ -----	“ -----	1.0818, 25° } }	
“ “ -----	“ -----	1.09620 } 15° } }	
“ “ -----	“ -----	1.09657 } 15° } }	Perkin. J. P. C. (2), 32, 523.
“ “ -----	“ -----	1.08430 } 25° } }	
“ “ -----	“ -----	1.08476 } 25° } }	
Propylidene chloride-----	“ -----	1.143, 10° -----	Reboul. C. R. 82, 378.
Isobutylene chloride-----	$C_4H_8Cl_2$ -----	1.112, 18° -----	Kolbe. J. 2, 338.
“ “ -----	“ -----	1.0953, 0° --- } }	Kopp. A. C. P. 95, 307.
“ “ -----	“ -----	1.0751, 20° .7 } }	
Isobutylidene chloride-----	“ -----	1.0111, 12° -----	Oeconomides. Ber. 14, 1201.
Amylene chloride-----	$C_5H_{10}Cl_2$ -----	1.058, 9° -----	Guthrie. J. 14, 665.
“ “ -----	“ -----	1.2219, 0° -----	Bauer. J. 19, 531.
Isoamylidene chloride-----	“ -----	1.05, 24° -----	Ebersbach. J. 11, 297.
Chloramyl chloride-----	“ -----	1.194, 0° -----	Buff. J. 21, 333.
Hexylene chloride. B. 180°	$C_6H_{12}Cl_2$ -----	1.087, 20° -----	Pelouze and Ca- hours. J. 16, 525.
“ “ B. 163°	“ -----	1.0527, 11° -----	Henry. C. R. 97, 260.
Heptylene chloride-----	$C_7H_{14}Cl_2$ -----	1.0295, 10° -----	Husemann. B. D. Z.

## 3d. Miscellaneous Non-Aromatic Chlorides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chloroform	$\text{CHCl}_3$	1.48, 18°	Liebig. A. C. P. 1, 199.
"	"	1.491, 17°	Regnault. Ann. (2), 71, 381.
"	"	1.493	Swan. J. 1, 681.
"	"	1.497	
"	"	1.413	Sonbeiran and Mialhe. J. 2, 408.
"	"	1.496, 12°	
"	"	1.500, 15°	Gregory. J. 3, 454.
"	"	1.52523, 0°	Pierre. C. R. 27, 213.
"	"	1.512, 12°	Schiff. A. C. P. 107, 63.
"	"	1.49	Flückiger.
"	"	1.472, 16°	Geuther.
"	"	1.507, 17°	Flückiger. Z. A. C. 5, 302.
"	"	1.502	Rump. C. C. (3), 6, 34.
"	"	1.500, 15°	Remys. J. C. S. (2), 13, 439.
"	"	1.3954, 63°	Ramsay. J. C. S. 35, 463.
"	"	1.52657, 0°	Thorpe. J. C. S. 37, 371.
"	"	1.40877, 61°	
"	"	1.4018	Schiff. Ber. 14, 2763-2766.
"	"	1.40844	
"	"	1.4081, 60°	Schiff. Ber. 15, 2972.
"	"	1.40089, 29°	Nasini. G. C. I. 13, 135.
"	"	1.5039, 11°	Schiff. G. C. I. 13, 177.
"	"	1.4081, 60°	
"	"	1.48978, 18°	With intermediate values. Dreyer. P. A. (2), 20, 870.
"	"	1.45995, 35°	
"	"	1.50027	Perkin. J. P. C. (2), 32, 523.
"	"	1.50085	
"	"	1.48432	
"	"	1.48492	
Trichlorethane	$\text{CH}_2\text{Cl}_2$	1.372, 16°	Regnault. Ann. (2), 71, 364.
"	"	1.34651, 0°	Pierre. C. R. 27, 213.
"	"	1.32466, 15°	Perkin. J. P. C. (2), 32, 523.
"	"	1.31144, 25°	"
Chloroethylene dichloride	$\text{CH}_2\text{Cl}-\text{CHCl}_2$	1.422, 17°	Regnault. Ann. (2), 69, 153.
"	"	1.42234, 0°	Pierre. C. R. 27, 213.
"	"	1.4577, 9°	Schiff. G. C. I. 13, 177.
"	"	1.2943	
"	"	1.2946	
"	"	1.2947	
"	"	1.391	Debere. Bull. Acad. Belg. (3), 13, 250.
"	"	1.45527, 15°	Perkin. J. P. C. (2), 32, 523.
"	"	1.44303, 25°	"

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tetrachlorethane. B. 102°	$C_2H_2Cl_2 \cdot C_2Cl_4$ -----	1.530, 17° ----	Regnault. Ann. (2), 71, 366.
“ B. 135°	“ -----	1.576, 19° ----	Regnault. Ann. (2), 68, 162.
“ -----	“ -----	1.61158, 0° ---	Pierre. C. R. 27, 213.
Acetylene tetrachloride	$C_2H_2Cl_2 \cdot C_2H_2Cl_2$ ----	1.614, 0° ----	} Paterno and Pisati. Z. C. 14, 385.
“ “	“ -----	1.578, 24°·3	
“ “	“ -----	1.522, 100°·1	
Pentachlorethane-----	$C_2H_2Cl_2 \cdot C_2Cl_4$ -----	1.644 -----	Regnault. Ann. (2), 71, 368.
“ -----	“ -----	1.66237, 0° ----	Pierre. C. R. 27, 213.
“ -----	“ -----	1.71, 0° ----	} Paterno. Z. C. 12, 245.
“ -----	“ -----	1.69, 13° ----	
“ -----	“ -----	1.70893, 0° ----	
“ -----	“ -----	1.46052, 159°·1	} Thorpe. J. C. S. 37, 371.
Dichlorethylene	$C_2H_2Cl_2$ -----	1.250, 15° ----	Regnault. Ann (2), 69, 155.
Trichloropropane-----	$C_3H_5Cl_3$ -----	1.347 -----	Cahours. J. 3, 496.
Trichlorhydrin-----	$CH_2Cl \cdot CHCl \cdot CH_2Cl$ ----	1.41, 0° ----	} Three separate products. Linnemann. A. C. P. 136, 51.
“ -----	“ -----	1.40, 8° ----	
“ -----	“ -----	1.417, 15° ----	
“ -----	“ -----	1.41, 0° ----	Oppenheim. J. 19, 521.
“ -----	“ -----	1.39805 } 15°	} Perkin. J. P. C. (2), 32, 523.
“ -----	“ -----	1.39836 }	
“ -----	“ -----	1.38753 }	
“ -----	“ -----	1.38783 }	
Isotrichlorhydrin-----	$CH_2Cl \cdot CH_2 \cdot CHCl_2$ ----	1.362, 15° ----	Romburgh. Ber. 14, 1400.
Allylene tetrachloride----	$C_3H_4Cl_4$ -----	1.47, 13° ----	Borsche and Fittig. J. 18, 313.
“ “	“ -----	1.482 -----	} Ganswindt. Jena Inaug. Diss. 1873.
“ “	“ -----	1.485 -----	
Tetrachlorglycide-----	“ -----	1.496, 17° ----	Pfeffer and Fittig. J. 18, 504.
Allylidene tetrachloride----	“ -----	1.503, 17°·5----	Hartenstein. J. P. C. (2), 7, 295.
“ “	“ -----	1.522, 15° ----	Romburgh. Ber. 14, 1400.
Tetrachloropropane-----	“ -----	1.548 -----	Cahours. J. 3, 496.
“ -----	“ -----	1.55, s. -----	Berthelot.
Hexachloropropane-----	$C_3H_2Cl_6$ -----	1.626 -----	Cahours. J. 3, 496.
Heptachloropropane-----	$C_3HCl_7$ -----	1.731 -----	“ “
Chloropropylene-----	$C_3H_3Cl$ -----	.918, 9° -----	Linnemann. J. 19, 308.
“ -----	“ -----	.9307, 0° -----	Oppenheim. J. 19, 521.
“ -----	“ -----	.931, 0° -----	Oppenheim. J. 21, 339.
Allyl chloride-----	“ -----	.934, 0° -----	Oppenheim. J. 19, 521.
“ “	“ -----	.9547, 0° -----	Tollens. A. C. P. 156, 155.
“ “	“ -----	.9610, 0° -----	} Zander. A. C. P. 214, 181.
“ “	“ -----	.9002, 46° ----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Allyl chloride .....	$C_3H_5Cl$ .....	.9055, 41.8°	(Schiff, G. C. I. 13, 177.)
" " .....	" .....	.9379, 20°	Bruhl, Bei. 4, 789.
" " .....	" .....	.94396, 15°	Perkin, J. P. C. (2), 32, 523.
" " .....	" .....	.96228, 25°	"
Allylidene dichloride .....	$C_3H_4Cl_2$ .....	1.170, 24.5°	Hubner and Genthner, J. 13, 395.
$\alpha$ Dichloropropylene, Epichlorhydrin. ....	" .....	1.21 .....	Claus, A. C. P. 170, 125.
" " .....	" .....	1.22, 8°	Henry, Ber. 5, 965.
$\beta$ Dichloropropylene, Epichlorhydrin. ....	" .....	1.21, 20°	Reboul, J. 13, 460.
" " .....	" .....	1.23, 17.5°	Hartenstein, J. P. C. (2), 7, 295.
" " .....	" .....	1.226, 15°	Romburgh, Ber. 15, 245.
" " .....	" .....	1.25, 15°	(Friedel and Silva, Quoted by Romburgh.)
" " .....	" .....	1.218, 25°	"
$\alpha$ Trichloropropylene .....	$C_3H_3Cl_3$ .....	1.387, 14°	Borsche and Fittig, J. 18, 313.
$\beta$ Trichloropropylene .....	" .....	1.411, 20°	Pfeffer and Fittig, J. 18, 501.
Propargyl chloride .....	$C_3H_3Cl$ .....	1.0154, 5°	Henry, Ber. 8, 398.
Crotonylene dichloride .....	$C_4H_6Cl_2$ .....	1.131	Kekulé, J. 22, 507.
Chlorisobutylene .....	$C_4H_7Cl$ .....	.9785, 12°	Oeconomidis, Ber. 14, 1201.
Trichloropentane .....	$C_5H_9Cl_3$ .....	1.33, 13°	Bufl, J. 21, 334.
Tetrachloropentane .....	$C_5H_7Cl_4$ .....	2.4292	Bauer, J. 19, 534.
Chloromylene .....	$C_5H_7Cl$ .....	.9992, 0°	"
" .....	" .....	.872, 55.1°	Braylants, Ber. 8, 411.
Isoprene hydrochlorate .....	" .....	.868, 16°	Bouchardat, J. C. S. 38, 323.
Isoprene dichloride .....	$C_5H_8Cl_2$ .....	1.065, 16°	"
Trichlorohexane .....	$C_6H_9Cl_3$ .....	1.193, 21°	Pelonne and Cahours, J. 16, 525.
Hexachlorohexane .....	$C_6H_6Cl_6$ .....	1.598, 20°	"
Chlorohexylene .....	$C_6H_{11}Cl$ .....	.9636, 11°	Henry, C. R. 97, 260.
Chlorodiallyl .....	$C_6H_9Cl$ .....	.9197, 18°	Henry, J. C. S. 36, 34.
Chlorodimethylene chloride .....	$C_{10}H_{16}Cl_2$ .....	1.1638, 0°	Bauer, J. 20, 583.
Eicosylene chloride .....	$C_{20}H_{34}Cl_2$ .....	1.013, 24°	Lippmann and Hawliczek, Ber. 12, 73.
Is-vinyl chloride .....	$C_2H_3Cl$ .....	1.406 .....	Baumann, A. C. P. 163, 308.
Chloronitrene .....	$C_2H_3Cl$ .....	1.141, 10°	St. Evre, J. 1, 536.

## 4th. Aromatic Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Monochlorbenzene	$C_6H_5Cl$	1.1499, 0°	From benzene. Sokoloff. J. 18, 517.
"	"	1.1347, 10°	
"	"	1.1258, 20°	
"	"	1.1188, 30°	
"	"	1.1199, 0°	From phenol. Sokoloff. J. 18, 517.
"	"	1.1085, 10°	
"	"	1.099, 20°	
"	"	1.092, 30°	
"	"	1.118	Jungfleisch. J. 19, 551.
"	"	1.77, —40°	Jungfleisch. J. 20, 36.
"	"	.980, 133°	
"	"	1.1293, 0°	Jungfleisch. J. 21, 343.
"	"	1.12855, 0°	From benzene. Adricenz. Ber. 6, 443.
"	"	1.11807, 9°.79	
"	"	1.10467, 22°.43	
"	"	1.04428, 77°.27	
"	"	1.12818, 0°	From phenol. Adricenz. Ber. 6, 443.
"	"	1.11421, 9°.79	
"	"	1.10577, 22°.43	
"	"	1.04299, 77°.27	
"	"	.9817 } 132°	Schiff. G. C. I. 13, 177.
"	"	.9818 }	
"	"	1.1066, 20°	Brühl. Bei. 4, 780.
"	"	1.1046, 25°.2	Scha11. Ber. 17, 2564.
"	"	1.0703, 52°.3	
"	"	1.106, 15°	Wallach and Heuser. A. C. P. 243, 226.
Orthodichlorbenzene	$C_6H_4Cl_2$	1.3278, 0°	Beilstein and Kurbatow. A. C. P. 176, 41.
"	"	1.3254, 0°	Friedel and Crafts. Ann. (6), 10, 416.
Metadichlorbenzene	"	1.3148	Beilstein and Kurbatow. B. S. C. 23, 179.
"	"	1.307, 0°	Beilstein and Kurbatow. J. C. S. (2), 13, 450.
Paradichlorbenzene	"	1.459, s.	Jungfleisch. J. 19, 551.
"	"	1.250, 53°	Jungfleisch. J. 20, 36.
"	"	1.123, 171°	
"	"	1.4581, 20°.5	Jungfleisch. J. 21, 347.
"	"	1.241, 63°	
"	"	1.2062, 93°	
"	"	1.1366, 166°	
"	"	1.467, 4°	Schröder. Ber. 12, 561.
"	"	1.2499, 55°.1	Schiff. A. C. P. 223, 247.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Trichlorbenzene	$C_6H_3Cl_3$	1.457, 7°	Mitscherlich, P. A. 35, 372
" 1.3.4	"	1.575	Jungfleisch, J. 19, 551.
" "	"	1.457, 17° S.	Jungfleisch, J. 20, 36.
" "	"	1.227, 206°	
" "	"	1.574, 10° S.	
" "	"	1.4658, 10° S.	
" "	"	1.4460, 26°	Jungfleisch, J. 21, 350.
" "	"	1.4111, 56°	
" "	"	1.2427, 196°	
" "	"	1.4554, 12° S.	Beilstein and Kurbatow, A. C. P. 192, 230.
Tetrachlorbenzene, 1.2.4.5	$C_6H_2Cl_4$	1.748	Jungfleisch, J. 19, 551.
" "	"	1.448, 139°	Jungfleisch, J. 20, 36.
" "	"	1.315, 240°	
" "	"	1.7344, 10° S.	
" "	"	1.4339, 149°	Jungfleisch, J. 21, 352.
" "	"	1.3958, 179°	
" "	"	1.3281, 230°	
Pentachlorbenzene	$C_6HCl_5$	1.925, 74°	Jungfleisch, J. 20, 36.
" "	"	1.370, 270°	
" "	"	1.8422, 10°	
" "	"	1.8342, 16° S.	
" "	"	1.6091, 84°	Jungfleisch, J. 21, 353.
" "	"	1.5732, 114°	
" "	"	1.3824, 261°	
Monochlortoluene	$C_6H_5C(H_3)Cl$	1.080, 14°	Limpriht, J. 19, 591.
" 1.1	"	1.0735, 27° S.	Arnheim and Dietrich, Ber. S. 1402.
" 6	"	9651, 159° S.	Schiff, G. C. I. 13, 177.
" "	"	1.072, 24° S.	
" "	"	1.061, 35° S.	
" "	"	1.049, 48° S.	
" "	"	1.029, 67° S.	Cattaneo, Bei. 7, 584.
" "	"	1.013, 83° S.	
" "	"	1.796, 99° S.	
" "	"	1.0561, 49°	Gladstone, Bei. 9, 249.
Benzyl chloride	$C_6H_5CH_2Cl$	1.1131	Cannizzaro, J. 8, 624.
" "	"	1.1179	
" "	"	1.107, 14°	Limpriht, J. 19, 592.
" "	"	9452, 175°	Schiff, G. C. I. 13, 177.
" "	"	9453, 175°	
" "	"	1.100, 30° S.	
" "	"	1.082, 44° S.	
" "	"	1.066, 59°	Cattaneo, Bei. 7, 584.
" "	"	1.047, 75°	
" "	"	1.016, 100° S.	
" "	"	1.099, 7°	Gladstone, Bei. 9, 249.
" "	"	9453, 178°	Schiff, G. C. I. 13, 177.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dichlortoluene. 1.2.4 ---	$C_6H_3 \cdot C H_3 \cdot Cl_2$ ----	1.24597, 20° --	Lellmann and Klotz. A. C. P. 231, 308.
“ 1.2.5 ---	“ ----	1.2535, 20° ---	“ “
“ 1.3.4 ---	“ ----	1.2518, 16° ---	Aronheim and Dietrich. Ber. 8, 1403.
“ “ ---	“ ----	1.2596, 18°.4 } ---	
“ “ ---	“ ----	1.2512, 20° ---	Lellmann and Klotz. A. C. P. 231, 308.
“ B. 202° ---	“ ----	1.256, 13° ---	Beilstein. J. 13, 412.
“ B. 207° ---	“ ----	1.2557, 14° ---	Limpricht. J. 19, 593.
Benzylidene dichloride ---	$C_6H_5 \cdot C H Cl_2$ ----	1.245, 16° ---	Cahours. J. 1, 711.
“ “ ---	“ ----	1.295, 16° ---	Hübner and Bente. Ber. 6, 804.
“ “ ---	“ ----	1.2699, 0° ---	} Schiff. Ber. 19, 563.
“ “ ---	“ ----	1.2122, 56°.8 ---	
“ “ ---	“ ----	1.1877, 79°.2 ---	
“ “ ---	“ ----	1.1257, 135°.5 ---	
“ “ ---	“ ----	1.0407, 203°.5 ---	} Henry. J. 22, 508.
Trichlortoluene ---	$C_6H_2 \cdot C H_3 \cdot Cl_3$ ----	1.413, 9° ---	
“ ---	“ ----	1.4093, 19°.5 ---	Aronheim and Dietrich. Ber. 8, 1405.
Dichlorbenzyl chloride ---	$C_6H_3 Cl_2 \cdot C H_2 Cl$ ---	1.44, 0° ---	Naquet. J. 15, 419.
Benzyl trichloride ---	$C_6H_5 \cdot C Cl_3$ ----	1.61, 13° ---	Limpricht. J. 18, 538.
“ “ ---	“ ----	1.380, 14° ---	Limpricht. J. 19, 594.
Tetrachlortoluene ---	$C_6H Cl_4 \cdot C H_3$ ----	1.495, 14° ---	Limpricht. J. 19, 595.
Trichlorbenzyl chloride ---	$C_6H_2 Cl_3 \cdot C H_2 Cl$ ---	1.547, 23° ---	Beilstein and Kuhlberg. J. 21, 361.
Orthodichlorbenzylene dichloride.	$C_6H_3 Cl_2 \cdot C H Cl_2$ --	1.518, 22° ---	“ “
Chlorbenzo-trichloride. 1.3	$C_6H_4 Cl \cdot C Cl_3$ ----	1.74 } ---	Limpricht. A. C. P. 134, 58.
“ “ ---	“ ----	1.76 } 13° -- { ---	
“ “ 1.2	“ ----	1.51 ---	Kolbe and Lautemann. A. C. P. 115, 196.
Bichlorbenzo-trichloride	$C_6H_3 Cl_2 \cdot C Cl_3$ ----	1.587, 21° ---	Beilstein and Kuhlberg. Z. C. 21, 363.
“ “ ---	“ ----	1.5829, 16° ---	Aronheim and Dietrich. Ber. 8, 1403.
Trichlorbenzylene dichloride.	$C_6H_2 Cl_3 \cdot C H Cl_2$ --	1.607, 22° ---	Beilstein and Kuhlberg. Z. C. 21, 362.
Tetrachlorbenzyl chloride	$C_6H Cl_4 \cdot C H_2 Cl$ ---	1.634, 25° ---	“ “
Tetrachlorbenzylene dichloride.	$C_6H Cl_4 \cdot C H Cl_2$ ---	1.704, 25° ---	Beilstein and Kuhlberg. Z. C. 21, 364.
Chlororthoxylene ---	$C_6H_3 \cdot C H_3 \cdot C H_3 \cdot Cl$ ---	1.0863, 19° ---	Claus and Kautz. Ber. 18, 1367.
“ 1.2.4 ---	“ ----	1.0692, 15° ---	Krüger. Ber. 18, 1757.
Chlormetaxylylene. 1.3.4 --	“ ----	1.0598, 20° ---	Jacobsen. Ber. 18, 1761.
Isotolyl chloride ---	$C_6H_4 \cdot C H_3 \cdot C H_2 Cl$ ---	1.079, 0° ---	} Gundelach. B. S. C. 25, 385.
“ “ ---	“ ----	1.064, 20° ---	
Chlorethylbenzene ---	$C_6H_4 \cdot C_2H_5 \cdot Cl$ ----	1.075, 0° ---	Istrati. B. S. C. 42, 115.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chloroethylbenzene	$C_6H_5 \cdot C_2H_5 \cdot Cl$	1.068	Istrati. Ber. 18, ref. 704.
Dichloro-ortho-xylene	$C_6H_2 \cdot 2CH_3 \cdot 2CH_2Cl$	1.333, s.	Colson. Ann. (6), 6, 86.
"	"	1.150, 70°, l.	
"	"	1.250, 20°, l.	
"	"	1.0980	Kautz. Freiburg In. Diss. 1885.
Dichloro-metaxylene	"	1.302, 20°, s.	Colson. Ann. (6), 6, 86.
"	"	1.202, 40°, l.	
Dichloro-paraxylene	"	1.343, s.	"
Ortho-xylene dichloride	$C_6H_4 (C_2H_2Cl)_2$	1.326	Colson. C. R. 104, 429.
Metaxylene dichloride	"	1.370	" "
Paraxylene dichloride	"	1.417	" "
Ortho-xylene tetrachloride	$C_6H_4 (C_2HCl_2)_2$	1.601	" "
Metaxylene tetrachloride	"	1.536	Colson and Gautier. C. R. 102, 689.
Paraxylene tetrachloride	"	1.696	" "
Chloro-xylene, 1.46	$C_6H_3 \cdot 3CH_3 \cdot C_2H_2Cl$	1.014, 44	Gerichten. Ber. 10, 1249.
Diethylmonochlorobenzene	$C_6H_5 \cdot Cl \cdot (C_2H_5)_2$	1.036	Istrati. Ber. 18, ref. 704.
Triethylmonochlorobenzene	$C_6H_5 \cdot Cl \cdot C_2H_5_3$	1.028	" "
Tetraethylmonochlorobenzene	$C_6H_5 \cdot Cl \cdot (C_2H_5)_4$	1.022	" "
Pentethylmonochlorobenzene	$C_6H_5 \cdot Cl \cdot (C_2H_5)_5$	1.065	" "
$\beta$ Chlorostyrene	$C_2H_3Cl$	2.112, 22°/3	Glaser. A. C. P. 151, 166.
$\beta$ Benzene hexachloride	$C_6H_6Cl_6$	1.89, 19°	Moulier. Ann. (6), 10, 223.
By action of ethylene on monochlorobenzene.	$C_6H_5Cl$	1.179	Istrati. Ber. 18, ref. 704.
$\alpha$ Chloronaphthalene	$C_{10}H_7Cl$	1.2052, 67.2	Laurent. Quoted by Chrius.
"	"	1.2028, 65.4	Carius. A. C. P. 111, 146.
"	"	1.2025, 15	Koninek and Mergart. C. N. 25, 57.
$\beta$ Chloronaphthalene	"	1.2656, 16	Rumarenko. Ber. 9, 661.
Naphthalene dichloride	$C_{10}H_6Cl_2$	1.287, 12°/5	Gladstone. Ber. 9, 219.
Trichloronaphthalene	$C_{10}H_4Cl_3$	1.43, 17	Keller and Norton. A. C. J. 10, 218.
Camphryl chloride	$C_{10}H_7Cl$	1.078, 14	Schwanert. J. 15, 465.
Geraniol hydrochloride	$C_{15}H_{27}Cl$	1.020, 20	Jacobsen. A. C. P. 157, 236.
Citronellin hydrochloride	"	1.133	Watts' Dictionary.
Feuilliterpene of Pinus pumila	"	1.082, 17°	Buchner. J. 13, 479.
Terbenthene hydrochloride	"	1.016 (0°)	Two isomers. Barbier. C. R. 96, 1096.
"	"	1.017 (0°)	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isoterebentene hydrochlorate.	$C_{10}H_{17}Cl$ -----	.9927, 0° -----	Riban. C. R. 79, 225.
From terpene of Muscat nut oil.	" -----	.9827, 15° -----	Cloëz. J. 17, 536.

## LII. COMPOUNDS CONTAINING C, H, O, AND CL.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dichlorethyl alcohol -----	$C_2H_4Cl_2O$ -----	1.145, 15° -----	Delacre. Bull. Acad. Belg. (3), 13, 248.
Trichlorethyl alcohol -----	$C_2H_3Cl_3O$ -----	1.55, 23°.3 -----	Garzarolli-Thurn-ackh. Ber. 14, 2826.
Dichlorhexyl alcohol -----	$C_6H_{12}Cl_2O$ -----	1.4, 12° -----	Destrem. Ann. (5), 27, 50.
Dichlormethyl oxide -----	$C_2H_4Cl_2O$ -----	1.315, 20° -----	Regnault. Ann. (2), 71, 398.
Tetrachlormethyl oxide -----	$C_2H_2Cl_4O$ -----	1.606, 20° -----	Regnault. Ann. (2), 71, 401.
Tetrachlormethylethyl oxide.	$C_3H_4Cl_4O$ -----	1.84, 0° -----	Magnanini. G. C. I. 16, 330.
Chlorethyl oxide -----	$C_2H_5ClO$ -----	1.0572, 0° -----	Henry. C. R. 100, 1007.
Dichlorethyl oxide -----	$C_2H_3Cl_2O$ -----	1.174, 23° -----	Lichen. J. 12, 446.
Tetrachlorethyl oxide -----	$C_2HCl_4O$ -----	1.5008 -----	Malaguti. Ann. (2), 70, 341.
" " -----	" -----	1.4379, 0° -----	Paterno and Pisati. Ber. 5, 1054. Roscoe and Schorlemmer's Treatise. Jacobsen. Z. C. 14, 444.
" " -----	" -----	1.4182, 15°.2 -----	
" " -----	" -----	1.3055, 99°.9 -----	
" " -----	" -----	1.4211, 15° -----	
Pentachlorethyl oxide -----	$C_2HCl_5O$ -----	1.645 -----	Henry. Ber. 7, 763.
Chloracetic acid -----	$C_2H_3ClO_2$ -----	1.366, 73° -----	R. Hofmann. J. 10, 348.
Dichloracetic acid -----	$C_2H_2Cl_2O_2$ -----	1.5216, 15° -----	Mannéné. J. 17, 315.
Trichloracetic acid -----	$C_2HCl_3O_2$ -----	1.617, 46° -----	Dumas. A. C. P. 32, 109.
Chlorpropionic acid -----	$C_3H_5ClO_2$ -----	1.28, 0° -----	Clermont. Z. C. 14, 349.
Chlorbutyric acid -----	$C_4H_7ClO_2$ -----	1.072, 0° -----	Ballbiano. Ber. 10, 1749.
" " ? -----	" -----	1.2198, 10° -----	Henry. C. R. 101, 1158.
" " ? -----	" -----	1.065, 15° -----	Haubst. J. C. S. (2), 1, 693.
Chlorisobutyric acid -----	" -----	1.062, 0° -----	Ballbiano. Ber. 11, 1693.
Methyl chlorocarbonate.	$C_2H_3ClO_2$ -----	1.236, 15° -----	Röser. Ber. 13, 2417.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl chlorocarbonate	$C_2H_5ClO_2$	1.133, 15°	Dumas. Ann. (2), 51, 230.
Propyl chlorocarbonate	$C_3H_7ClO_2$	1.094, 15°	Rose. Ber. 13, 2417.
Isopropyl chlorocarbonate	"	1.141, 4°	Spica. J. C. S. 52, 1028.
Isobutyl chlorocarbonate	$C_4H_9ClO_2$	1.053, 15°	Rose. Ber. 13, 2417.
Isomyl chlorocarbonate	$C_5H_{11}ClO_2$	1.032, 15°	" "
Dichlorethyl formate	$C_3H_4Cl_2O_2$	1.261, 16°	Malaguti. Ann. (2), 70, 370.
Pentachloramyl formate	$C_6H_7Cl_5O_2$	1.52	Springer. A. C. J. 3, 203.
Methyl monochloracetate	$C_3H_5ClO_2$	1.22, 15°	Henry. B. S. C. 20, 448.
" "	"	1.2552, 19°.	Henry. C. R. 101, 250.
Methyl dichloracetate	$C_3H_4Cl_2O_2$	1.3808, 19°.	" "
Dichloromethyl acetate	"	1.25	Malaguti. Ann. (2), 70, 381.
Methyl trichloracetate	$C_3H_3Cl_3O_2$	1.4969, 14°	Bauer. A. C. P. 229, 163.
" "	"	1.4902, 20°.	"
" "	"	1.4892, 19°.	Henry. C. R. 101, 250.
Ethyl monochloracetate	$C_4H_7ClO_2$	1.1585, 20°	Bruhl. A. C. P. 203, 1.
" "	"	.9925, 144°.	Schiff. G. C. I. 13, 177.
" "	"	1.1722, 8°	Henry. C. R. 101, 1280.
Ethyl dichloracetate	$C_4H_6Cl_2O_2$	1.301, 12°	Malaguti. Ann. (2), 70, 368.
" "	"	1.29	Forscher and Geuthner. J. 17, 316.
" "	"	1.2821, 20°	Bruhl. A. C. P. 203, 1.
" "	"	1.0913	Schiff. G. C. I. 13, 177.
" "	"	1.0915	"
Dichlorethyl acetate	"	1.3217, 10°.	Henry. C. R. 97, 1308.
" "	"	1.104, 15	Delacro. Bull. Acad. Belg. (3), 13, 255.
Ethyl trichloracetate	$C_4H_5Cl_3O_2$	1.3826, 20°	Bruhl. A. C. P. 203, 1.
" "	"	1.1650	Schiff. G. C. I. 13, 177.
" "	"	1.1651	"
Monochlorethyl dichloracetate.	"	1.200, 15°	Delacro. Ber. 21, ref. 183.
Dichlorethyl monochloracetate.	"	1.216, 15°	" "
Trichlorethyl acetate	"	1.367	Leblanc. Ann. (3), 10, 297.
" "	"	1.35, 20°	Malaguti. Ann. (3), 16, 62.
" "	"	1.3907, 23°.	Garzaroli-Thurnbach. Ber. 14, 2826.
" "	"	1.187, 15°	Delacro. Ber. 21, ref. 183.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tetrachlorethyl acetate---	$C_4 H_4 Cl_4 O_2$ -----	1.485, 25° ----	Léblanc. Ann. (3), 10, 212.
Monochlorethyl trichloro- acetate.	“-----	1.251, 15° ----	Delaere. Ber. 21, ref. 183.
Dichlorethyl dichloroace- tate.	“-----	1.25, 15° ----	“ “
Trichlorethyl monochloro- acetate.	“-----	1.25 -----	“ “
Trichlorethyl dichloroace- tate.	$C_4 H_3 Cl_5 O_2$ -----	1.267 -----	“ “
Hexchlorethyl acetate----	$C_4 H_2 Cl_6 O_2$ -----	1.698, 23°.5----	Léblanc. Ann. (3), 10, 215.
Heptachlorethyl acetate--	$C_4 H Cl_7 O_2$ -----	1.692, 24°.5----	Léblanc. Ann. (3), 10, 208.
Propyl monochloroacetate.	$C_5 H_9 Cl O_2$ -----	1.1096, 8° ----	Henry. C. R. 100, 114.
Butyl monochloroacetate--	$C_6 H_{11} Cl O_2$ -----	1.013, 0° ----	Gehring. C. R. 102, 1400.
“ “-----	“-----	1.081, 15° --	
Trichlorobutyl acetate ----	$C_6 H_9 Cl_3 O_2$ -----	1.3440, 8°.5----	Garzarolli-Thurn- lackh. Ber. 15, 2619.
Amyl monochloroacetate--	$C_7 H_{13} Cl O_2$ -----	1.063, 0° ----	Hougounenq. B. S. C. 45, 328.
Methyl $\alpha$ chloropropionate	$C_4 H_7 Cl O_2$ -----	1.075, 4° ----	Kahlbaum. Ber. 12, 344.
Ethyl $\alpha$ chloropropionate.	$C_5 H_9 Cl O_2$ -----	1.0869, 20° ----	Brühl. A. C. P. 203, 1.
Ethyl $\beta$ chloropropionate.	“-----	1.1160, 8° ----	Henry. C. R. 100, 114.
Ethyl dichloropropionate--	$C_5 H_8 Cl_2 O_2$ -----	1.2461, 20° ----	Brühl. A. C. P. 203, 1.
“ “-----	“-----	1.2493, 0° ----	Klimenko. Z. C. 13, 654.
Dichlorethyl propionate--	“-----	1.282, 8° ----	Henry. C. R. 100, 114.
Methyl chlorbutyrate ----	$C_5 H_9 Cl O_2$ -----	1.1894, 10° ----	Henry. C. R. 101, 1158.
Methyl $\alpha$ $\beta$ dichlorobuty- rate. “ “-----	$C_5 H_8 Cl_2 O_2$ -----	1.2809, 0° --	Zeisel. Ber. 19, ref. 749.
“ “-----	“-----	1.2614, 18°.3	
“ “-----	“-----	1.2355, 41°.1	
Ethyl chlorbutyrate ----	$C_6 H_{11} Cl O_2$ -----	1.0517, 20° ----	Brühl. A. C. P. 203, 1.
“ “-----	“-----	1.1221, 10° ----	Henry. C. R. 101, 1158.
“ “-----	“-----	1.063, 17°.5----	Markownikoff. A. C. P. 153, 243.
Methyl trichloropropylear- bylacetate.	$C_7 H_{11} Cl_3 O_2$ -----	1.3048, 11°.5----	Garzarolli-Thurn- lackh. A. C. P. 223, 149.
Chloroanthic ether ----	$C_9 H_{17} Cl O_2$ ?-----	1.2912, 16°.5----	Malaguti. Ann. (2), 70, 363.
Derivative of chlorinated methyl formate.	$C_4 H_5 Cl_3 O_4$ -----	1.4786, 14° ----	Guthzeit. Quoted by Hentschel.
“ “-----	“-----	1.4741, 27° ----	Hentschel. J. P. C. (2), 36, 99.
“ “-----	$C_8 H_9 Cl_3 O_8$ -----	1.5191 -----	“ “
Derivative of chlorinated ether.	$C_5 H_{11} Cl O$ -----	.9482, 0° ----	Lieben and Bauer. J. 15, 494.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Derivative of chlorinated ether.	$C_6H_{11}ClO$	1.9735, 0°	Lieben and Butler, J. 15, 393.
Chloroacetic anhydride.	$C_2H_3ClO_3$	1.291, 21°	Anthoine, J. Ph. Ch. (5), 8, 417.
Trichloroacetic anhydride.	$C_2HCl_3O_3$	1.539, 20°	" "
Tetrachloroacetic anhydride.	$C_2H_2Cl_4O_3$	1.574, 24°	" "
Acetyl chloride	$C_2H_3OCl$	1.125, 11°	Gerhardt, J. 5, 414.
" "	"	1.1305, 0°	Kopp, A. C. P. 95,
" "	"	1.1072, 16°	307.
" "	"	1.13753, 0°	Thorpe, J. C. S.
" "	"	1.05698, 50°	37, 371.
" "	"	1.1051, 20°	Brühl, A. C. P.
Chloroacetyl chloride	$C_2H_2Cl_2OCl$	1.195, 0°	203, 1.
Propionyl chloride	$C_3H_5OCl$	1.0649, 20°	Wuriz, J. 10, 346.
<i>a</i> -Chloropropionyl chloride	$C_3H_4ClOCl$	1.2394, 72.5°	Brühl, A. C. P.
<i>β</i> -Chloropropionyl chloride	"	1.3307, 13°	203, 1.
Butyryl chloride	$C_4H_7OCl$	1.0277, 20°	Henry, C. R. 100,
Isobutyryl chloride	"	1.0174, 20°	114.
Chlorobutyryl chloride	$C_4H_6ClOCl$	1.257, 17°	Brühl, A. C. P.
" "	"	1.2679, 10°	203, 1.
Valeryl chloride	$C_5H_9OCl$	1.005, 6°	" "
" "	"	1.9887, 20°	Bechamp, J. 9, 429.
Chloroacetone	$C_3H_5ClO$	1.19	Brühl, A. C. P.
" "	"	1.14, 14°	203, 1.
" "	"	1.162, 16°	Bechamp, J. 9, 429.
" "	"	1.18, 16°	Brühl, A. C. P.
" "	"	1.17	203, 1.
" "	"	1.158, 13°	Henry, B. S. C. 19,
Dichloroacetone	$C_3H_4Cl_2O$	1.331	219.
" "	"	1.256, 21°	Cloez, Ann. (6), 9,
" "	"	1.326, 0°	145.
" "	"	1.234, 15°	Kane.
Trichloroacetone	$C_3H_3Cl_3O$	1.482, 17°	Fittig, J. 12, 345.
Perchloroacetone	$C_3HCl_4O$	1.6	Thegarten, C. C.
" "	"	1.7	1, 580.
" "	"	1.617, 8°	Cloez, Ann. (6), 9,
" "	"	1.576, 14°	145.
$C_4H_7OCl_2$	$C_4H_7OCl_2$	1.23	" "
Phenyl chloraldehyde	$C_7H_5ClO$	1.69, 8°	Städeler, J. 6, 398.
Chloral	$C_2HClO$	1.502, 18°	(Two isomers.
" "	"	1.5181, 0°	Cloez, B. S. C.
" "	"	1.4903, 22°	39, 638 and 640.
" "	"	1.5181, 0°	Richer, J. 12, 435.
" "	"	1.4903, 22°	Jacobsen, Ber. 8, 88.
" "	"	1.5181, 0°	Liedig, A. C. P. 1,
" "	"	1.4903, 22°	195.
" "	"	1.5181, 0°	Kopp, A. C. P. 95,
" "	"	1.4903, 22°	307.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chloral	$C_2 H Cl_3 O$	1.5448, 0°	Thorpe. J. C. S. 37, 371.
"	"	1.3821, 97°.2	
"	"	1.5121, 20°	
"	"	1.54179	Brühl. A. C. P. 203, 1.
"	"	1.54170	
"	"	1.3692, 97°.73	
"	"	1.5292, 9°	Passavant. C. N. 42, 288.
"	"	1.5197, 15°	
"	"	1.5060, 25°	
Parachloralide	$(C_2 H Cl_3 O)_n$	1.5765, 14°	Perkin. J. C. S. 51, 808.
Chloral hydrate	$C_2 H_3 Cl_3 O_2$	1.901	Clöez. J. 12, 434.
"	"	1.818, 4°, pulv.	Rüdorf. Ber. 12, 252.
"	"	1.848, 4°, cryst.	Schröder. Ber. 12, 561.
"	"	1.6415, 49°.9	Perkin. J. C. S. 51, 808.
"	"	1.6274, 58°.4	
"	"	1.6136, 66°.9	
"	"	1.5704	Jungfleisch, Le- baigne, and Rou- cher. J. Ph. C. (4), 11, 208.
"	"	1.5719	
"	"	1.5771	
Chloral ethylate	$C_4 H_7 Cl_3 O_2$	1.143, 40°, l.	Martins and Men- delssohn-Bar- tholdy. Z. C. 13, 650.
"	"	1.3286	Jungfleisch, Le- baigne, and Rou- cher. J. Ph. C. (4), 11, 208.
"	"	1.3439	
Chloral amylate	$C_7 H_{11} Cl_3 O_2$	1.234, 25°	Martins and Men- delssohn-Bar- tholdy. Z. C. 13, 650.
Chloroacetyl chloral	$C_4 H_4 Cl_4 O_2$	1.4761, 17°	Meyer and Dulk. A. C. P. 171, 65.
Diacetylchloral hydrate	$C_6 H_7 Cl_3 O_4$	1.422, 11°	" "
Acetylchloral ethylate	$C_6 H_9 Cl_3 O_3$	1.327, 11°	" "
Derivative of chloral	$C_6 H_6 Cl_3 O_2$	1.73, 17°	Henry. Ber. 7, 764.
"	$C_7 H_{10} Cl_4 O_3$	1.42, 11°	" "
Butyl chloral	$C_4 H_5 Cl_3 O$	1.3956, 20°	Brühl. A. C. P. 203, 1.
"	"	1.4111, 7°	Gladstone. Bei. 9, 249.
Butyl chloral hydrate	$C_4 H_7 Cl_3 O_2$	1.693	Schröder. Ber. 12, 561.
"	"	1.695	
Derivative of chloralide	$C_5 H Cl_7 O_3$	1.7426, 20°	Anschutz and Has- lam. A. C. P. 239, 300.
Chlorovaleral	$C_5 H_9 Cl O$	1.108, 14°	A. Schröder. Z. C. 14, 510.
Derivative of valeral	$C_{10} H_{10} Cl_4 O$	1.272, 14°	" "
"	$C_{10} H_{12} Cl_6 O$	1.397, 14°	" "
Dichlorovinylmethyloxi- de	$C_3 H_4 Cl_2 O$	1.2934, 0°	Denaro. G. C. I. 14, 117.
"	"	1.1574, 100°	
Monochlorovinyl ethyl ox- ide.	$C_4 H_7 Cl O$	1.0361, 19°	Godefroy. C. R. 102, 869.
Trichlorovinyl ethyl oxide	$C_4 H_5 Cl_3 O$	1.3725, 0°	Paterno and Pisati. J. C. S. (2), 11, 158.
"	"	1.2354, 99°.9	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Trichlorovinyl ethyl oxide	$C_4 H_5 Cl_3 O$	1.3222, 19°	Godefroy. C. R. 102, 869.
Methylene aceto-chloride	$C_3 H_5 Cl O_2$	1.1953, 14°.2	Henry. B. S. C. 20, 418.
Ethylene aceto-chloride	$C_4 H_7 Cl O_2$	1.1783, 0°	Simpson. J. 12, 487.
" "	"	1.114, 15°	Franchimont. J. C. S. 44, 452.
Ethylene butyro-chloride	$C_6 H_{11} Cl O_2$	1.0854, 0°	Simpson. J. 12, 489.
Ethylidene oxychloride	$C_4 H_8 Cl_2 O$	1.1376, 12°	Lieben. J. 11, 294.
" "	"	1.136, 14°.5	Laatsch. A. C. P. 218, 13.
Ethylidene aceto-chloride	$C_4 H_7 Cl O_2$	1.114, 15°	Rubencamp. A. C. P. 225, 267.
Ethylidene propio-chloride	$C_5 H_9 Cl O_2$	1.071, 15°	" "
Ethylidene butyro-chloride	$C_6 H_{11} Cl O_2$	1.038, 15°	" "
Ethylidene valero-chloride	$C_7 H_{13} Cl O_2$	.997, 15°	" "
Aldehydimethyl chloride	$C_3 H_5 Cl O$	.996, 17°	" "
Trichlorodimethyl acetal	$C_4 H_7 Cl_3 O_2$	1.28	Magnanini. G. C. I. 16, 330.
Trichloromethylethyl acetal	$C_5 H_9 Cl_3 O_2$	1.32	" "
Chloroacetal	$C_6 H_{11} Cl O_2$	1.0195	Lieben. J. 10, 437.
" "	"	1.0418, 0°	Paterno and Mazzara. J. C. S. (2), 11, 1217.
" "	"	1.0416, 26°.3	
" "	"	.9315, 99°.9	
" "	"	1.026, 15°	Klien. J. C. S. 31, 291.
Dichloroacetal	$C_6 H_{12} Cl_2 O_2$	1.1383, 11°	Lieben. J. 10, 436.
Trichloroacetal	$C_6 H_{11} Cl_3 O_2$	1.2813, 0°	(Paterno and Pisati. J. C. S. (2), 11, 258.
" "	"	1.2655, 22°.2	
" "	"	1.1617, 99°.96	
" "	"	1.288	Byasson. C. N. 38, 46.
Trimethylene chlorhydrin	$C_3 H_7 Cl O$	1.132, 17°	Reboul. C. R. 79, 169.
Propylene chlorhydrin	"	1.1302, 0°	Oeser. J. 13, 448.
" "	"	1.247	Oppenheim. J. 21, 340.
Chlorbutylene chlorhydrin	$C_4 H_8 Cl_2 O$	1.0335, 0°	Oeconomides. Ber. 14, 1568.
Hexylene chlorhydrin	$C_6 H_{11} Cl O$	1.0143	Henry. C. R. 97, 260.
" "	"	1.018	
Hexylene aceto-chloride	$C_8 H_{15} Cl O_2$	1.04, 6°	" "
Heptylene chlorhydrin	$C_7 H_{13} Cl O$	1.014, 0°	Clermont. Z. C. 13, 411.
" "	"	1.001, 14°	
Octylene chlorhydrin	$C_8 H_{17} Cl O$	1.003, 0°	" "
" "	"	.987, 31°	
Octylene aceto-chloride	$C_{10} H_{19} Cl O_2$	1.026, 0°	" "
" "	"	1.011, 18°	
Dichloroethoxyethylene	$C_4 H_6 Cl_2 O$	1.08, 10°	Geuther and Brockhoff. J. P. C. (2), 7, 114.
Pentachloropropylene oxide	$C_3 H Cl_5 O$	α1.5	Cloez. Ann. (6), 9, 145.
Ethylglycollic chloride	$C_4 H_7 Cl O_2$	1.145, 1°	Henry. J. 22, 531.
Chlorolactic ether	$C_5 H_9 Cl O_3$	1.097, 0°	Wuriz. J. 11, 254.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl chloromalonate----	$C_7 H_{11} Cl O_4$ -----	1.185, 20° ----	Conrad and Bisch- off. A. C. P. 209, 221.
Ethyl ethylchloromalo- nate.	$C_9 H_{15} Cl O_4$ -----	1.110, 17° ----	Guthzeit. A. C. P. 209, 233.
Ethyl chlorisobutylmalo- nate.	$C_{11} H_{19} Cl O_4$ -----	1.094, 15° ----	Conrad and Bisch- off. Ber. 13, 600.
“ “ -----	“ -----	1.091, 15° ----	Guthzeit. A. C. P. 209, 237.
Succinyl chloride-----	$C_4 H_4 Cl_2 O_2$ -----	1.39 -----	Gerhardt and Chi- ozza. C. R. 36, 1052.
Chloromaleic ether -----	$C_8 H_{11} Cl O_4$ -----	1.15, 11° -----	Henry. A. C. P. 156, 179.
“ “ -----	“ -----	1.178, 20° -----	Frank. Ber. 10, 928.
Ethyl chloracetacetate -----	$C_6 H_9 Cl O_3$ -----	1.19, 14° -----	Allihn. Ber. 11, 569.
Ethyl dichloracetacetate----	$C_6 H_8 Cl_2 O_3$ -----	1.293, 16° -----	Conrad. A. C. P. 186, 234.
Ethyl chloracetopropio- nate.	$C_7 H_{11} Cl O_3$ -----	1.196, 21° ----	Conrad and Guth- zeit. Ber. 17, 2287.
Ethyl monochlormethyl- acetacetate.	$C_7 H_{11} Cl O_3$ -----	1.093, 15° -----	Isbert. A. C. P. 234, 160.
Ethyl dichlormethylacet- acetate.	$C_7 H_{10} Cl_2 O_3$ -----	1.2250, 17° ----	Isbert. Jena Inaug. Diss. 1866.
Ethyl monochlorethyl- acetacetate.	$C_8 H_{13} Cl O_3$ -----	1.0523, 15° ----	Isbert. A. C. P. 234, 160.
Ethyl dichlorethylacetac- etate.	$C_8 H_{12} Cl_2 O_3$ -----	1.183, 15° ----	“ “
Ethyl diethylchloracetac- etate.	$C_{10} H_{17} Cl O_3$ -----	1.063, 15° ----	James. J. C. S. 49, 50.
Ethyl diethyldiehloraet- acetate.	$C_{10} H_{16} Cl_2 O_3$ -----	1.155, 15° ----	“ “
Acetotrichlorethylidene acetic ether.	$C_8 H_9 Cl_3 O_3$ -----	1.342, 15° -----	Matthews. J. C. S. 43, 203.
Monochlorhydrin-----	$C_3 H_7 Cl O_2$ -----	1.31 -----	Berthelot. J. 6, 456.
“ -----	“ -----	1.4, 13° -----	Henry. J. C. S. (2), 13, 346.
“ $\beta$ -----	“ -----	1.328, 0° -----	Hanriot. Ber. 10, 727.
Dichlorhydrin-----	$C_3 H_6 Cl_2 O$ -----	1.37 -----	Berthelot. J. 7, 449.
“ -----	“ -----	1.3699, 9° -----	Henry. A. C. P. 155, 324.
“ -----	“ -----	1.355, 17°.5----	Gegerfeldt. Z. C. 13, 672.
“ -----	“ -----	1.383, 0° -----	Markownikoff. J. C. S. (2), 12, 241.
“ -----	“ -----	1.367, 19° -----	
“ -----	“ -----	1.3799, 0° -----	Tollens. A. C. P. 156, 164.
“ -----	“ -----	1.3681, 11°.5----	
Epichlorhydrin-----	$C_3 H_5 Cl O$ -----	1.204, 0° -----	Darmstaedter. J. 21, 454.
“ -----	“ -----	1.194, 11° -----	Reboul. J. 13, 456.
“ -----	“ -----	1.20313, 0° -----	Thorpe. J. C. S. 37, 371.
“ -----	“ -----	1.05667, 116°.55----	
“ -----	“ -----	1.0588 -----	{ Schiiff. Ber. 14, 2768.
“ -----	“ -----	1.0598 -----	
“ -----	“ -----	1.194, 11° -----	Clöez. Ann. (6), 9, 145.
Ethyl monochlorhydrin----	$C_5 H_{11} Cl O_2$ -----	1.117, 11° -----	Henry. J. C. S. (2), 13, 346.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHOR.
Dichloromono-chlorhydrin	$C_2H_3Cl_3O_2$	1.063, 10°/5	Alsborg, J. 17, 193.
"	"	1.095, 17°	Reich and Lenczner, Z. C. 11, 974.
Acetylmono-chlorhydrin	$C_4H_5ClO_2$	1.09, 20	Reich, J. 17, 464.
Acetylchlorhydrin	$C_4H_4ClO_2$	1.27, 9	Henry, J. C. S. 2, 13, 346.
Aceto-chlorhydrin	$C_3H_5Cl_2O_2$	1.283, 11	Truchot, J. 18, 507.
"	"	1.271, 8	Henry, Ber. 4, 701.
Diacetylchlorhydrin	$C_7H_{10}ClO_4$	1.243, 11	Truchot, J. 18, 514.
Benzoylchlorhydrin	$C_7H_9Cl_2O_2$	1.194, 11	"
Valerylchlorhydrin	$C_8H_{11}Cl_2O_2$	1.149, 11	"
Benzylmono-chlorhydrin	$C_8H_9ClO_2$	1.232, 17	Ziegler, Ber. 18, 601.
Benzylchlorhydrin	$C_7H_7Cl_2O$	1.271, 16	"
Benzyl epichlorhydrin	$C_7H_7ClO$	1.098, 15°	"
Dichlorodichlorhydrin	$C_2H_2Cl_4O_2$	1.17	Henry, Ber. 7, 416.
Chlorodichlorhydrin	$C_2H_3Cl_3O_2$	1.164, 19°	Henry, Ber. 15, 3085.
Chloroglycolalcohol	"	1.192, 15°	Reidburgh, Ber. 15, 245.
Methylchlorallylcarbinol	$C_4H_9ClO$	1.082, 11	Garzardli-Thurnbach, A. C. P. 223, 149.
Chlorostyryl alcohol	$C_4H_7ClO$	1.1312, 15°	Garzardli-Thurnbach, Ber. 15, 2616.
Methyl chloracetate	$C_3H_7ClO_2$	1.13, 15	Frolich, J. 22, 517.
"	"	1.093, 1°	Kohlbaum, Ber. 12, 341.
Ethyl chloracetate	$C_4H_9ClO_2$	1.113, 15°	Frolich, J. 22, 517.
"	"	1.129, 15	Chaus, A. C. P. 191, 64.
Chloroethylacetylene tetracarboxylic ether	$C_{10}H_4ClO_4$	1.976, 20°	Bischoff and Reich, Ber. 17, 277.
Chloroethyl chloride	$C_2H_4Cl_2O_2$	1.40, 15°	Gerhardt and Chaus, J. C. 394.
"	"	1.198, 16	O. Strocker, Ber. 15, 1649.
Propylphosgene trichlorhydrin	$C_3H_5Cl_3O$	1.321, 11°	Wolff, Z. C. 12, 465.
Dichlorodiacetyl	$C_4H_6Cl_2O_2$	1.082, 7	Lefort, J. 6, 451.
Derivative of isobutylalcohol	$C_4H_9Cl_2O_4$	.967, 15	Boquillon, J. C. S. 48.
Derivative of isohexylalcohol	$C_6H_{13}Cl_2O$	1.171, 19	Demargay, Ber. 12, 380.
Chlorophenol	$C_6H_5ClO$	1.397, 20°/5	Petersen and B. 17, Prodani, A. C. P. 157, 125.
Chloroethylphenol	$C_7H_7ClO$	1.182, 9	Henry, Z. C. 17, 247.
Chloroparacresol	"	1.2106, 25°	Schall and Drafke, Ber. 17, 2529.
Chloromethylparacresol	$C_7H_9ClO$	1.146, 25°	"
Chloroethylphenol	"	1.106, 9°	Henry, Z. C. 17, 247.
Methylchlorphenetol, $\alpha$	$C_8H_{11}ClO$	1.127, 19°/5	Wroblevsky, Z. C. 13, 164.
" $\beta$	"	1.131, 18°	"

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chloroethiol -----	$C_{10} H_{11} Cl O$ -----	1.1154, 0° -----	Ladenburg. Z. C. 12, 575.
“ -----	“ -----	1.191, 20° -----	Landolph. C. R. 82, 227.
Metachlorosalicyl -----	$C_7 H_5 Cl O_2$ -----	1.29, 8° -----	Henry. J. 22, 509.
Metachlorbenzoic acid -----	“ -----	1.29 -----	St. Evre. J. 1, 529.
Ethyl metachlorbenzoate -----	$C_9 H_{10} Cl O_2$ -----	.981, 10° -----	“ -----
Ethyl orthodichlorbenzoate. -----	$C_9 H_8 Cl_2 O_2$ -----	1.3278, 0° -----	Beilstein. Ber. 8, 435.
Chlorisopropyl benzoate -----	$C_{10} H_{11} Cl O_2$ -----	1.172, 19° -----	Morley and Green. J. C. S. 47, 135.
“ -----	“ -----	1.149, 45° -----	
Derivative of benzoic ether -----	$C_{18} H_{16} Cl_6 O_3$ -----	1.346, 10°.8 -----	Malaguti. Ann. (2), 70, 375.
Benzyl monochloracetate. -----	$C_9 H_9 Cl O_2$ -----	1.2223, 4° -----	Seubert. Ber. 21, 281.
Benzyl dichloracetate -----	$C_9 H_5 Cl_2 O_2$ -----	1.3130, 4° -----	“ -----
Benzyl trichloracetate -----	$C_9 H_7 Cl_3 O_2$ -----	1.3887, 4° -----	“ -----
Benzoyl chloride -----	$C_7 H_5 Cl O$ -----	1.196 -----	Wöhler and Liebig. A. C. P. 3, 262.
“ “ -----	“ -----	1.250, 15° -----	Cahours. J. 1, 532.
“ “ -----	“ -----	1.2324, 0° -----	Kopp. A. C. P. 95, 307.
“ “ -----	“ -----	1.2142, 19° -----	
“ “ -----	“ -----	.9857, 198° -----	Ramsay. J. C. S. 35, 463.
“ “ -----	“ -----	1.2122, 20° -----	Brühl. A. C. P. 235, 1.
Chlorodraeylic chloride -----	$C_7 H_4 Cl_2 O$ -----	1.377 -----	Emmerling. Ber. 8, 881.
Toluy chloride -----	$C_8 H_7 Cl O$ -----	1.175 -----	Cahours. J. 11, 265.
Phenylacetic chloride -----	“ -----	1.16817, 20° -----	Anschütz and Berns. Ber. 20, 1390.
Cumyl chloride -----	$C_{10} H_{11} Cl O$ -----	1.07, 15° -----	Cahours. J. 1, 534.
Anisyl chloride -----	$C_8 H_7 Cl O_2$ -----	1.261, 15° -----	Cahours. J. 1, 538.
Cinnamyl chloride -----	$C_9 H_7 Cl O$ -----	1.207, 16° -----	Cahours. J. 1, 535.
Phthalyl chloride -----	$C_8 H_4 Cl_2 O_2$ -----	1.0489, 20° -----	Brühl. A. C. P. 235, 1.
Dichloracetophenone -----	$C_8 H_6 Cl_2 O$ -----	1.338, 15° -----	Gautier. Ber. 20, ref. 12.
Trichloracetophenone -----	$C_8 H_5 Cl_3 O$ -----	1.427, 15° -----	“ -----
Chlorobenzyl ethylate -----	$C_9 H_{11} Cl O$ -----	1.121, 14° -----	Naquet. J. 15, 420.
Ethyl benzylchloromalonate. -----	$C_{14} H_{17} Cl O_4$ -----	1.150, 19° -----	Conrad. Ber. 13, 2159.
Benzodichlorhydrin -----	$C_{10} H_{10} Cl_2 O_2$ -----	1.441, 8° -----	Truchot. J. 18, 503.
Trichlorphenomalic acid -----	$C_7 H_7 Cl_3 O_5$ -----	1.5 -----	Carius. J. 1866, 561.
Tetrachlorethyl camphorate. -----	$C_{14} H_{20} Cl_4 O_4$ -----	1.386, 14° -----	Malaguti. Ann. (2), 70, 360.
Santonyl chloride -----	-----	1.1644 -----	Carnelutti and Nasini. Ber. 13, 2210.
Derivative of bergamot oil -----	$6 (C_{10} H_{16}). 2 H Cl. H_2 O$ -----	.896 -----	Ohme. A. C. P. 31, 318.

## LIII. COMPOUNDS CONTAINING C, CL, N, OR C, H, CL, N.

NAME	FORMULA	SPEC. GRAVITY	AUTHORITY
Chloroacetonitrile	$C_2H_2ClN$	1.204, 11° 2	Bisschopinek. B. S. C. 20, 450.
"	"	1.193, 20°	Engler. Ber. 6, 1093.
Dichloroacetonitrile	$C_2HCl_2N$	1.374, 11° 4	Bisschopinek. B. S. C. 20, 450.
Trichloroacetonitrile	$C_2Cl_3N$	1.444	Dumas. J. 1, 563.
"	"	1.439, 12° 2	Bisschopinek. B. S. C. 20, 450.
Dichloropropionitrile	$C_3H_2Cl_2N$	1.431, 15°	Otto. J. 13, 400.
Chlorobutyronitrile	$C_4H_4ClN$	1.4620, 10°	Henry. C. R. 101, 1158.
Dichloroethylamine	$C_2H_5Cl_2N$	1.2397, 5°	Tscherniak. Ber. 9, 147.
"	"	1.2300, 15°	
Chloroxalothylin	$C_4H_5ClN_2$	1.2473, 16°	Wallach and Schulze. Ber. 14, 424.
Chloroxalothylin	$C_6H_8ClN_2$	1.1420, 15°	Wallach. Ber. 7, 328.
"	"	1.142	Wallach and Stricker. Ber. 13, 512.
Chloroxalpropylin	$C_8H_{11}ClN_2$	1.0900	Wallach and Schulze. Ber. 14, 424.
Orthochloroaniline	$C_6H_6ClN$	1.2338, 0°	Beilstein and Kurbatow. Ber. 7, 487.
Metachloroaniline	"	1.2432, 0°	Beilstein and Kurbatow. A. C. P. 176, 45.
Chlorotoluidine. B. 222	$C_7H_8ClN$	1.151, 20°	Wroblevsky. Z. C. 12, 322-544.
" B. 238	"	1.1855, 20°	Wroblevsky. Z. C. 12, 684.
" B. 237°-242	"	1.203, 19°	" "
" B. 236°	"	1.175, 18°	Henry and Radziszewski. Z. C. 12, 542.
Chlorpicoline	$C_6H_6ClN$	1.146, 20°	Ost. J. P. C. (2), 27, 278.
Orthochlorochinoline	$C_9H_6ClN$	1.2752, 16° 2	Bölowig. Tübingen In. Diss. 1885.
"	"	1.2754, 16° 6	
Parachlorochinoline	"	1.3768, 14° 6	" "
"	"	1.3766, 15°	
Chloride from methyluracil	$C_4H_4N_2Cl$	1.6273, 21° 8	Behrend. A. C. P. 229, 26.

## LIV. COMPOUNDS CONTAINING C, CL, N, O, OR C, H, CL, N, O.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chloronitromethane ----	$C H_2 Cl N O_2$ ----	1.466, 15° ----	Tscherniak. Ber. 8, 609.
Dichlordinitromethane----	$C Cl_2 N_2 O_4$ ----	1.685, 15° ----	Marignac. Watts' Diet.
Chlorpicrin ----	$C Cl_3 N O_2$ ----	1.6657 ----	Stenhouse. J. 1, 540.
" ----	" ----	1.69225, 0° ----	Thorpe. J. C. S. 37,
" ----	" ----	1.48444, 111°.9 ----	371.
Dichloramyl nitrite ----	$C_5 H_9 Cl_2 N O_2$ ----	1.233, 12° ----	Guthrie. J. 11, 404.
Trichloracetyl cyanide ----	$C_3 Cl_3 N O$ ----	1.559, 15° ----	Hofferichter. J. P. C. (2), 20, 195.
Trichloroacetic dimethyl- amide.	$C_4 H_6 Cl_3 N O$ ----	1.441, 15° ----	Franchimont and Klobbie. Ber. 20, ref. 690.
Ethylene chloronitrin ----	$C_2 H_4 Cl N O_3$ ----	1.378, 21° ----	Henry. Ann. (4), 27, 243.
Propylene chloronitrin ----	$C_3 H_6 Cl N O_3$ ----	1.28, 12° ----	" "
Dichlormethoxyacetonitril.	$C_3 H_3 Cl_2 N O$ ----	1.3885 ----	Bauer. A. C. P. 229, 163.
Dichloroethoxyacetonitril.	$C_4 H_5 Cl_2 N O$ ----	1.3394, 15°.5 ----	" "
Dichloropropoxyacetonitril.	$C_5 H_7 Cl_2 N O$ ----	1.2382, 15°.5 ----	" "
Dichlorisobutoxyacetonitril.	$C_6 H_9 Cl_2 N O$ ----	1.1226, 15°.5 ----	" "
Monochlordinitrin ----	$C_3 H_5 Cl N_2 O_6$ ----	1.5112, 9° ----	Henry. A. C. P. 155, 168.
Dichlormononitrin ----	$C_3 H_5 Cl_2 N O_3$ ----	1.465, 10° ----	" "
Chlorazol ----	$C_4 H_3 Cl_3 N_2 O_4$ ----	1.555 ----	Mühlhäuser. J. 7, 671.
Dichlornitrophenol ----	$C_6 H_3 Cl_2 N O_3$ ----	1.59 ----	Fischer. A. C. P., 7th Supp., 185.
Chlornitrobenzene ----	$C_6 H_4 Cl N O_2$ ----	1.377, 0° ----	Sokoloff. J. 19, 552.
" ----	" ----	1.358, 0° ----	" "
" ----	" ----	1.368, 22° ----	Jungfleisch. J. 21, 345.
" Meta ----	" ----	1.534 ----	Schröder. Ber. 13, 1070.
" Para ----	" ----	1.380, 22° ----	Jungfleisch. J. 21, 343.
Chlordinitrobenzene ----	$C_6 H_3 Cl_2 N_2 O_4$ ----	1.697, 22° ----	Jungfleisch. J. 21, 345.
" ----	" ----	1.6867, 16°.5 ----	Jungfleisch. J. 21, 346.
" ----	" ----	1.72, 18° ----	Eugelhardt and Latschinoff. Z. C. 13, 232.
Dichlornitrobenzene ----	$C_6 H_3 Cl_2 N O_2$ ----	1.669, 22° ----	Jungfleisch. J. 21, 348.
Trichlornitrobenzene ----	$C_6 H_2 Cl_3 N O_2$ ----	1.790, 22° ----	Jungfleisch. J. 21, 351.
Dichlordinitrobenzene ----	$C_6 H_2 Cl_2 N_2 O_4$ ----	1.7103, 16° ----	Jungfleisch. J. 21, 348.
Trichlordinitrobenzene----	$C_6 H Cl_3 N_2 O_4$ ----	1.850, 25° ----	Jungfleisch. J. 21, 352.

NAME	FORMULA	SP. GRAVITY	AUTHORITY
Tetrachloronitrobenzene	$C_6H_4Cl_4N O_2$	1.744, 25°	Jungfleisch, J. 21, 353.
Pentachloronitrobenzene	$C_6Cl_5N O_2$	1.718, 25	Jungfleisch, J. 21, 354.
Chloronitrotoluene	$C_7H_7Cl N O_2$	1.307, 18	Wroblevsky, Z. C. 12, 683.
"	"	1.3259, 18	" "
"	"	1.300, 20	Wroblevsky, Ber. 7, 1662.
Parachlorometanitrotoluene	"	1.297, 22°	Gattermann and Kaiser, Ber. 18, 2600.
Dichloronitrotoluene	$C_7H_5Cl_2 N O_2$	1.455, 17°	Wroblevsky and Pirogoff, Ber. 3, 203.
Derivative of acetanilide	$C_8H_7Cl N O_2$	1.3899, 20°	Witt, Ber. 8, 1227.
Derivative of protein	$C_{12}H_{11}Cl N O_2$	1.328, 22	Muhlhauser, J. 7, 671.
" " "	$C_8H_{12}Cl N O_4$	1.360	" "

## LV. COMPOUNDS CONTAINING C, H, AND BR.

## 1st. Bromides of the Paraffin Series

NAME	FORMULA	SP. GRAVITY	AUTHORITY
Methyl bromide	$C H_3 Br$	1.96443, 0	Pierre, C. R. 27, 213.
" "	"	1.732	Two lots, Merrill, J.
" "	"	1.7116, 0	P. C. (2), 18, 293.
" "	"	1.73306, 15	Perkin, J. P. C. (2),
" "	"	1.72345, 25°	31, 481.
" "	"	1.46576, 15	
" "	"	1.45967, 18	
" "	"	1.45554, 20	
" "	"	1.45349, 21	Weegmann, Z. P. C.
" "	"	1.44733, 24	2, 218.
" "	"	1.44122, 27	
Ethyl bromide	$C_2H_5 Br$	1.40	Lowig, A. C. P. 3, 292.
" "	"	1.47329, 0°	Pierre, C. R. 27, 213.
" "	"	1.4600, 20	Boegen, P. A. 131, 117.
" "	"	1.4621, 9	Dehn, A. C. P., 4th Supp. 85.
" "	"	1.4685, 13° 5	Linnemann, A. C. P. 160, 195.
" "	"	1.4489, 15°	Mendeleeff, J. 13, 7.
" "	"	1.4775, 5° 40	)
" "	"	1.4679, 10° 15	Regnault, P. A.
" "	"	1.4582, 15° 20	62, 50.
" "	"	1.47, 15°	Gladstone and Tribe, J. C. S. (2), 12, 110.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl bromide	$C_2H_5Br$	1.4069, 20°	Naumann. Ber. 10, 2016.
" "	"	1.4579, 14°	DeHeen. Bei. 5, 105.
" "	"	1.4134, 38°.	Schiff. Ber. 19, 560.
" "	"	1.44988, 15°	Perkin. J. P. C. (2),
" "	"	1.43250, 25°	31, 481.
Propyl bromide	$C_3H_7Br$	1.353, 16°	Chapman and Smith.
" "	"	1.388, 0°	J. 22, 360.
" "	"	1.3497, 0°	Rossi. A. C. P. 159,
" "	"	1.301, 30°.15	79.
" "	"	1.2589, 54°.2	Pierre and Puchot.
" "	"	1.3577, 16°	Ann. (4), 22, 284.
" "	"	1.3520	Linnemann. A. C.
" "	"	1.3529	P. 161, 40.
" "	"	1.3617, 14°	Brühl. A. C. P.
" "	"	1.3835, 0°	203, 1.
" "	"	1.2639, 71°	DeHeen. Bei. 5, 115.
" "	"	1.36110, 15°	Zander. A. C. P. 214,
" "	"	1.34739, 25°	181.
Isopropyl bromide	"	1.320, 13°	Perkin. J. P. C. (2),
" "	"	1.320, 13°	31, 481.
" "	"	1.33, 21°	Linnemann. J. 18,
" "	"	1.248, 20°	489.
" "	"	1.2997	Linnemann.
" "	"	1.3097	Linnemann. A. C.
" "	"	1.3117	P. 161, 18.
" "	"	1.3397, 0°	Three lots. Brühl.
" "	"	1.2368, 60°	A. C. P. 203, 1.
" "	"	1.31978, 15°	Zander. A. C. P.
" "	"	1.30522, 25°	214, 181.
Butyl bromide	$C_4H_9Br$	1.305, 0°	Perkin. J. P. C. (2),
" "	"	1.2792, 20°	31, 481.
" "	"	1.2571, 40°	Lieben and Rossi.
" "	"	1.2990, 20°	A. C. P. 158, 137.
" "	"	1.2605, 14°	Linnemann. Ann.
Isobutyl bromide	"	1.274, 16°	(4), 27, 268.
" "	"	1.2702, 16°	DeHeen. Bei. 5, 105.
" "	"	1.249, 0°	Wurtz. J. 7, 572.
" "	"	1.191, 40°.2	Chapman and Smith.
" "	"	1.1408, 73°.5	J. C. S. 22, 153.
" "	"	1.2038, 16°	"
" "	"	1.1456, 90°.5	"
" "	"	1.27221, 15°	"
" "	"	1.25984, 25°	"
Trimethylethyl bromide	"	1.215, 20°	"
" "	"	1.20200, 15°	"
" "	"	1.18922, 25°	"
Normal pentyl bromide	$C_5H_{11}Br$	1.246, 0°	"
" "	"	1.2234, 20°	"
" "	"	1.2044, 40°	"
" "	"	1.2044, 40°	Lieben and Rossi.
" "	"	1.2044, 40°	A. C. P. 159, 70.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Amyl bromide	$C_5H_{11}Br$	1.46576, 0	Pierre, C. R. 27, 213.
" "	"	1.217, 16°	Chapman and Smith, J. 22, 367.
" "	"	1.2045, 20°	Haugen, P. A. 131, 117.
" "	"	1.2059, 15°	Mendelejeff, J. 13, 7.
" "	"	1.0502, 120°	Ramsay, J. C. S. 35, 463.
" "	"	1.2002, 14°	De Heen, Bol. 5, 105.
" "	"	1.0126, 117°	Schiff, Ber. 14, 2766.
" "	"	1.0127, 117°	
" "	"	1.2058, 22°	Lachowicz, A. C. P. 220, 171.
" "	"	1.0881, 118°	Schiff, Ber. 19, 560.
" " Active	"	1.225, 15°	Le Bel, B. S. C. 25, 546.
" " Inactive	"	1.2358, 0°	Balliano, Ber. 9, 1437.
" "	"	1.21927, 15°	Perkin, J. P. C. 12, 31, 481.
" "	"	1.20834, 25°	
Normal hexyl bromide	$C_6H_{13}Br$	1.4935, 0°	
" " " "	"	1.4725, 20°	Lieben and Janacek, J. R. C. 5, 156.
" " " "	"	1.1531, 40°	
Normal heptyl bromide	$C_7H_{15}Br$	1.433, 16°	Cross, J. C. S. 32, 123.
Secondary heptyl bromide	"	1.422, 17°	Venable, Ber. 13, 1650.
Normal octyl bromide	$C_8H_{17}Br$	1.416, 16°	Zincke, J. 22, 371.
" " " "	"	1.11798, 15°	Perkin, J. P. C. 12, 31, 481.
" " " "	"	1.09993, 25°	
Secondary octyl bromide	"	1.0989, 22°	Lachowicz, A. C. P. 220, 185.

2d Bromides of the Series  $C_nH_{2n}Br_2$ .

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methylene bromide	$C_1H_2Br_2$	2.4814, 11°	Steiner, Ber. 7, 507.
" "	"	2.4930, 0°	Henry, Ann. (5), 30, 265.
" "	"	2.49850, 15°	
" "	"	2.49922, 15°	Perkin, J. P. C. 12, 32, 523.
" "	"	2.47849, 25°	
" "	"	2.47715, 25°	
Ethylene bromide	$C_2H_4Br_2$	2.464, 21°	Regnault, Ann. 24, 59, 358.
" "	"	2.128, 13°	D'Arost, J. P. C. 5, 28.
" "	"	2.16292, 20°	Pierre, C. R. 27, 213.
" "	"	2.179, 15°	Butlerow, J. 14, 652.
" "	"	2.1827, 20°	Haugen, P. A. 131, 117.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethylene bromide -----	$C H_2 Br. C H_2 Br$ --	2.198, 10° ----	Reboul. Z. C. 13, 200.
" " -----	" --	2.21324, 0° ---	} Thorpe. J. C. S. 37, 371.
" " -----	" --	1.93124, 131°.45	
" " -----	" --	2.1785, 20° ---	} Anschütz. A. C. P. 221, 133.
" " -----	" --	2.1767, 21°.5	
" " -----	" --	1.9246, 130°.3	Schiff. Ber. 19, 560.
" " -----	" --	2.18895, 15° ---	} Perkin. J. P. C. (2), 32, 523.
" " -----	" --	2.17271 } 25°	
" " -----	" --	2.17197 } 25°	
" " -----	" --	2.17681, 20° ---	
Ethylidene bromide -----	$C H_3. C H Br_2$ -----	2.135, 0° -----	Caventou. J. 14, 608.
" " -----	" -----	2.129 } 10° {	} Reboul. Z. C. 13, 200.
" " -----	" -----	2.132 } 10° {	
" " -----	" -----	2.0822, 21°.5	Anschütz. A. C. P. 221, 133.
" " -----	" -----	2.10006, 17°.5	{ Angelbis Freiburg Inaug. Diss. 1884.
" " -----	" -----	2.08905, 20°.5	
" " -----	" -----	2.10297, 15° } 25°	} Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	2.08540, 25° } 25°	
" " -----	" -----	2.05545, 20° ---	Weegmann. Z. P. C. 2, 218.
Trimethylene bromide -----	$CH_2 Br. CH_2. CH_2 Br$ -----	2.0177, 0° -----	Geromont. A. C. P. 158, 370.
" " -----	" -----	1.9839, 13°.5	Reboul. J. C. S. 36, 127.
" " -----	" -----	1.9228 -----	Freund. Ber. 14, 2270.
" " -----	" -----	2.0060, 0° ---	} Zander. A. C. P. 214, 181.
" " -----	" -----	1.7101, 165° ---	
" " -----	" -----	1.98236, 15° ---	} Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	1.96836, 25° ---	
Propylene bromide -----	$CH_3. CH Br. CH_2 Br$ -----	1.7 -----	Reynolds. J. 3, 495.
" " -----	" -----	1.974 -----	Cahours. J. 3, 496.
" " -----	" -----	1.955, 9° -----	Reboul. Z. C. 13, 200.
" " -----	" -----	1.954, 15° ---	} Linnemann. A. C. P. 136, 53.
" " -----	" -----	1.950, 16° ---	
" " -----	" -----	1.943, 17° -----	Linnemann. A. C. P. 138, 123.
" " -----	" -----	1.972, 0° ---	} Erlenneyer. A. C. P. 139, 226.
" " -----	" -----	1.946, 17° ---	
" " -----	" -----	1.9586, 0° ---	} Two products. Friedel and Ladenburg. B. S. C. 8, 146.
" " -----	" -----	1.9256, 20° ---	
" " -----	" -----	1.9710, 0° ---	} Linnemann. A. C. P. 161, 42.
" " -----	" -----	1.9383, 20° ---	
" " -----	" -----	1.9463, 17° ---	} Zander. A. C. P. 214, 181.
" " -----	" -----	1.9465, 15° ---	
" " -----	" -----	1.9617, 0° -----	} Gladstone. Bei. 9, 249.
" " -----	" -----	1.6944, 141°.7	
" " -----	" -----	1.8893, 18° ---	} Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	1.910, 21° ---	
" " -----	" -----	1.94426 } 15°	
" " -----	" -----	1.94474 } 15°	
" " -----	" -----	1.93004 } 25°	} Perkin. J. P. C. (2), 32, 523.
" " -----	" -----	1.93030 } 25°	

NAME	FORMULA	SPEC. GRAVITY	AUTHORITY
Dibromomethane (100% pure)	$\text{CH}_2\text{Br}_2$	1.8119, 0	(Friedland and Loh- burg, B. S. C. 8, 150.)
"    "    "    "    "    "	"	1.7825, 20	"
"    "    "    "    "    "	"	1.895, 0	Reboult, Z. C. 13, 200.
"    "    "    "    "    "	"	1.875, 10	Reboult.
"    "    "    "    "    "	"	1.81761, 15	Perkin, J. P. C. 2, 32, 523.
"    "    "    "    "    "	"	1.8110, 25	"
Diethyl dibromide	$\text{C}_2\text{H}_5\text{CHBrCH}_2\text{Br}$	1.870, 0	Wurtz, J. 22, 65.
"    "    "    "    "    "	"	1.8503, 0	Greshowsky and Saytzeff, A. C. P. 170, 332.
"    "    "    "    "    "	"	1.8295, 20	"
Bromobenzene	$\text{C}_6\text{H}_5\text{Br}$	1.829, 0	Wurtz, J. 20, 573.
"    "    "    "    "    "	"	1.81, 0	"
"    "    "    "    "    "	"	1.807, 0	"
"    "    "    "    "    "	"	1.7215, 70	Pichet, Ann. 5, 28, 543.
"    "    "    "    "    "	"	1.7178, 100	"
"    "    "    "    "    "	"	1.7134, 15	"
"    "    "    "    "    "	"	1.713, 0	Perkin, J. P. C. 2, 32, 523.
"    "    "    "    "    "	"	1.708, 25	"
"    "    "    "    "    "	"	1.702, 40	"
Isobutylene dibromide	$\text{C}_4\text{H}_9\text{Br}_2$	1.708, 14	Twozotzky, L. 2, 25, 14.
"    "    "    "    "    "	"	1.6907, 0	Wurtz and Schlenker, A. C. P. 17, 21.
"    "    "    "    "    "	"	1.68, 24	Stoll, Z. B. 11, 238.
Ethyl isobutyl dibromide	$\text{C}_6\text{H}_{13}\text{Br}_2$	1.687, 0	Wurtz and Schlenker, A. C. P. 17, 21.
"    "    "    "    "    "	"	1.67, 0	"
Isobutylene dibromide	$\text{C}_4\text{H}_9\text{Br}_2$	1.643, 0	Herington, A. C. P. 17, 21.
"    "    "    "    "    "	"	1.63, 2	Glassford, J. 21, 219.
"    "    "    "    "    "	"	1.629, 15	"
"    "    "    "    "    "	"	1.609, 0	Perkin, J. P. C. 2, 32, 523.
"    "    "    "    "    "	"	1.61, 0	"
"    "    "    "    "    "	"	1.61, 25	"
Hexabromide	$\text{C}_6\text{H}_6\text{Br}_6$	1.82, 10	Perkin, J. P. C. 2, 32, 523.
"    "    "    "    "    "	"	1.5075, 18	Thompson and Young, A. C. P. 165, 1.
"    "    "    "    "    "	"	1.5067, 20	"
"    "    "    "    "    "	"	1.5008, 0	Herington and Schlenker, A. C. P. 172, 281.
"    "    "    "    "    "	"	1.5809, 19	"
"    "    "    "    "    "	"	1.6167, 0	Herington, A. C. P. 172, 281.
Heptyl bromide	$\text{C}_7\text{H}_{15}\text{Br}$	1.519, 18.5	Thompson and Young, A. C. P. 165, 1.

## 3d. Miscellaneous Non-Aromatic Bromides.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Bromoform	$\text{C H Br}_3$	2.13	Löwig. A. C. P. 3, 296.
"	"	2.9, 12°	Cahours. J. 1, 501.
"	"	2.775, 14° 5'	Schmidt. Ber. 10, 194.
"	"	2.81185, 8° 56'	} Thorpe. J. C. S. 37, 201 and 371.
"	"	2.48611, 151° 2'	
"	"	2.90246	} Perkin. J. P. C. (2), 32, 523.
"	"	2.90450	
"	"	2.88253	
"	"	2.88421	
Bromethylene dibromide	$\text{C H}_2 \text{ Br. C H Br}_2$	2.620, 23°	Wurtz. J. 10, 461.
"	"	2.663, 0°	Simpson. J. 10, 461.
"	"	2.659, 0°	Caventou. J. 14, 608.
"	"	2.624, 16°	Tawildarow. A. C. P. 176, 21.
"	"	2.65, 0°	Demole. Ber. 9, 49.
"	"	2.6189, 17° 5'	} Anschütz. A. C. P. 221, 61.
"	"	2.6107, 21° 5'	
"	"	2.57896, 20°	Weegmann. Z. P. C. 2, 218.
Tetrabromethane	$\text{C H}_2 \text{ Br. C Br}_3$	2.88, 22°	Reboul. Z. C. 13, 200.
"	"	2.93	Bourgoin. J. C. S. 32, 443.
"	"	2.9292, 17° 5'	} Anschütz. A. C. P. 221, 133.
"	"	2.9216, 21° 5'	
"	"	2.88249, 16° 6'	} Weegmann. Z. P. C. 2, 218.
"	"	2.87687, 19° 1'	
"	"	2.87482, 20°	
"	"	2.87214, 21° 2'	
"	"	2.86512, 24° 3'	
"	"	2.85836, 27° 3'	
"	"	2.85189, 30° 2'	} Sabanejeff. A. C. P. 178, 114.
Acetylene tetrabromide	$\text{C H Br}_2. \text{C H Br}_2$	2.848, 21° 5'	
"	"	2.9469	} Anschütz. Ber. 12, 2075.
"	"	2.9517	
"	"	2.9708	} Anschütz. A. C. P. 221, 133.
"	"	2.9712	
"	"	2.9629, 21° 5'	} Eltzbacher. Bonn Inaug. Diss. 1884.
"	"	2.92011, 17° 5'	
"	"	2.96725, 20°	Weegmann. Z. P. C. 2, 218.
Bromethylene, or vinyl bromide.	$\text{C}_2 \text{ H}_3 \text{ Br}$	1.52	Watts' Dictionary.
"	"	1.5286, 11°	} Anschütz. A. C. P. 221, 133.
"	"	1.5167, 14°	
"	"	1.52504, 9° 6'	Perkin. J. P. C. (2), 32, 523.
Dibromethylene	$\text{C}_2 \text{ H}_2 \text{ Br}_2$	3.038, 10°	} Sawitsch. J. 13, 431.
"	"	3.053, 14° 5'	
"	"	2.1780, 20° 6'	Anschütz. A. C. P. 221, 133.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Acetylene dibromide	$C_2H_2Br_2$	2.120, 17°	Tawildarow. A. C. P. 176, 23.
" "	"	2.2023, 22° 7'	Sabanejeff. B. S. C. 27, 371.
" "	"	2.268, 0°	Plimpton. Ber. 14, 1812.
" "	"	2.271, 0°	Sabanejeff. Ber. 16, 1220.
" "	"	2.223, 19°	
" "	"	2.2711, 17° 5'	Anschütz. A. C. P. 221, 133.
" "	"	2.2983, 0°	Weger. A. C. P. 221, 61.
" "	"	2.0352, 110° 5'	
" "	"	2.22889, 20°	Weegmann. Z. P. C. 2, 218.
Tribromethylene	$C_2HBr_3$	2.68762, 20°	" "
Tribromopropane	$CH_3.CBr_2.CH_2Br$	2.336	Cahours. J. 3, 496.
"	"	2.392, 23°	Wurtz. J. 10, 462.
"	"	2.39, 10°	Linnemann. J. 18, 490.
"	"	2.33, 12°	Reboul. J. C. S. 36, 127.
"	$CH_3.CHBr.CHBr_2$	2.356, 18°	Reboul. C. R. 79, 317.
Tribromhydrin	$CH_2Br.CHBr.CH_2Br$	2.436, 23°	Wurtz. J. 10, 463.
"	"	2.966, 0°	Perrot. J. 11, 395.
"	"	2.407, 10°	Henry. A. C. P. 154, 370.
"	"	2.41344, 15°	Perkin. J. P. C. (2), 32, 523.
"	"	2.39856, 25°	
Tetrabromopropane	$C_3H_4Br_4$	2.469	Cahours. J. 3, 496.
Allylene tetrabromide	$C_3H_2Br_4$	2.91, 0°	Oppenheim. J. 17, 493.
Tetrabromglycide	$CHBr_2.CHBr.CH_2Br$	2.64	Reboul. J. 13, 462.
Pentabromopropane	$C_3H_3Br_5$	2.601	Cahours. J. 3, 496.
$\alpha$ Brompropylene	$C_3H_5Br$	1.364, 19° 5'	Reboul. C. R. 79, 317.
"	"	1.39, 9°	Reboul. J. C. S. 36, 127.
"	"	1.42077, 15°	Perkin. J. P. C. (2), 32, 523.
"	"	1.40527, 25°	
$\beta$ Brompropylene	"	1.400, 13°	Linnemann. A. C. P. 136, 55.
"	"	1.410, 14°	Linnemann. J. 19, 308.
"	"	1.408, 19°	
"	"	1.4110, 15°	Linnemann. A. C. P. 161, 18.
"	"	1.428, 19° 5'	Reboul. C. R. 79, 317.
Allyl bromide	"	1.472	Cahours. J. 3, 496.
" "	"	1.451, 0°	Tollens. J. P. C. 107, 185.
" "	"	1.4385, 15°	
" "	"	1.3609, 62°	
" "	"	1.4507, 0°	Tollens and Henninger. Z. C. 12, 88.
" "	"	1.461, 0°	Tollens. A. C. P. 156, 153.
" "	"	1.436, 15°	
" "	"	1.4593, 0°	Zander. A. C. P. 214, 181.
" "	"	1.3233, 70° 5'	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Allyl bromide-----	$C_3 H_5 Br$ -----	1.396, 20°.5 } 1.3867, 24°.5 } 1.3980, 20°-----	Gladstone. Bei. 9, 249. Brühl. A. C. P. 235, 1.
“ “-----	“-----	1.42532, 15° } 1.41057, 25° } 2.06, 11°-----	Perkin. J. P. C. (2), 22, 523. Reboul. J. 13, 461.
Epidibromhydrin-----	$C_3 H_4 Br_2$ -----	1.950-----	Cahours. J. 3, 496.
Allylene bromide-----	“-----	2.05, 0°-----	Oppenheim. J. 17, 493.
“ “-----	“-----	2.00, 15°-----	Borsche and Fittig. J. 18, 314.
“ “-----	“-----	1.98, 15°-----	Linnemann. J. 18, 490.
Propargyl tribromide-----	$C_3 H_3 Br_3$ -----	2.53, 10°-----	Henry. Ber. 7, 761.
Propargyl bromide-----	$C_3 H_3 Br$ -----	1.52, 20°-----	Henry. B. S. C. 20, 452.
“ “-----	“-----	1.59, 11°-----	Henry. Ber. 7, 761.
Propargyl pentabromide-----	$C_3 H_3 Br_5$ -----	3.01, 10°-----	“ “-----
Tribromisobutane-----	$C_4 H_7 Br_3$ -----	2.187, 17°-----	Norton and Wil- liams. A. C. J. 9, 88.
Bromamylene-----	$C_5 H_9 Br$ -----	1.22, 19°-----	Linnemann. Z. C. 11, 58.
Isoprene bromide-----	“-----	1.175, 15°-----	Bouchardat. J. C. S. 38, 323.
Isoprene dibromide-----	$C_5 H_8 Br_2$ -----	1.601, 15°-----	“ “-----
Bromhexylene. B. 99°-100°.	$C_6 H_{11} Br$ -----	1.35, 12°-----	Destrem. Ann. (5), 27, 50.
“ B. 138°-----	“-----	1.17, 15°-----	Reboul and Truchot. J. 20, 587.
“ B. 140°-----	“-----	1.2205, 0°----- } 1.2025, 15°----- }	Hecht and Strauss. A. C. P. 172, 62.
Hexine dibromide-----	$C_6 H_{10} Br_2$ -----	1.6977, 0°----- } 1.5543, 100°----- }	Hecht. Ber. 11, 1054.
“ “-----	“-----	2.1625, 0°-----	“ “-----
Hexine tetrabromide-----	$C_6 H_{10} Br_4$ -----	1.656-----	Henry. J. C. S. (2), 11, 1215.
Dibromdiallyl-----	$C_6 H_8 Br_2$ -----	2.464, 19°-----	Henry. Ber. 7, 761.
Dipropargyl tetrabromide-----	$C_6 H_6 Br_4$ -----	1.5679, 16°.25-----	Wertheim. J. 15, 367.
Conylene bromide-----	$C_8 H_{14} Br_2$ -----	1.109, 15°-----	Reboul and Truchot. J. 28, 588.
Bromdecylene-----	$C_{10} H_{19} Br$ -----	2.075-----	Baumann. A. C. P. 163, 308.
Isovinyl bromide-----	$(C_2 H_3 Br)_n$ -----	2.9, 15°, l----- } 3.4, solid----- }	Colson. B. S. C. 48, 52. Two modifi- cations.
Erythrene hexbromide-----	$C_4 H_4 Br_6$ -----		
“ “-----	“-----		

## 4th. Aromatic Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Brombenzene	$C_6H_5Br$	1.519 ( 0° )	Ladenburg. Ber. 7, 1685.
"	"	1.522 ( 0° )	"
"	"	1.51768, 0°	"
"	"	1.50236, 11°.46	"
"	"	1.48977, 20°.96	Adrieeenz. Ber. 6, 444.
"	"	1.41163, 77°.76	"
"	"	1.4914, 20°	Bruhl. Bei. 4, 780.
"	"	1.5203, 0°	Weger. A. C. P. 221, 61.
"	"	1.3080, 155°.6	"
"	"	1.4958, 16°	Gladstone. Bei. 9, 249.
"	"	1.49225, 23°	"
"	"	1.3080, 155°	Schiff. Bei. 9, 559.
"	"	1.3090, 156°	Schiff. Ber. 19, 560.
Orthodibrombenzene	$C_6H_4Br_2$	2.003, 0°	Körner. J. C. S. (3), 1, 214.
"	"	1.858, 99°	"
Metadibrombenzene	"	1.955, 18°.6	"
Paradibrombenzene	"	2.218 ( 4° )	Schroder. Ber. 12, 561.
"	"	2.222 ( 4° )	"
"	"	1.8408, 89°.3	Schiff. A. C. P. 223, 247.
Benzyl bromide	$C_6H_5 \cdot C H_2 Br$	1.438, 22°	Kekulé. J. 20, 662.
Orthobromtoluene	$C_6H_4 \cdot C H_3 \cdot Br$	1.4092, 21°.5	Glinzer and Fittig. J. 18, 538.
"	"	1.4109, 22°	Kekulé. J. 20, 663.
"	"	1.401, 18°	Wroblevsky. A. C. P. 168, 147.
"	"	1.2031, 182°.5	Schiff. Ber. 19, 560.
Metabromtoluene	"	1.4009, 21°	Wroblevsky. Z. C. 13, 239.
Parabromtoluene	"	1.3999, 30°	Hubner and Terry. Z. C. 14, 232.
Dibromtoluene. B. 236°	$C_6H_3 \cdot C H_3 \cdot Br_2$	1.8127, 19°	Wroblevsky. Z. C. 13, 239.
" B. 238°-239°	"	1.812, 19°	"
" B. 246°	"	1.812, 22°	Wroblevsky. Z. C. 14, 272.
Ethylbrombenzene. 1.1	$C_6H_4 \cdot C_2H_5 \cdot Br$	1.31, 13°.5	Fittig and Koenig. J. 20, 609.
Bromxylene	$C_6H_3 \cdot C H_3 \cdot C H_3 \cdot Br$	1.335, 21°	Beilstein. J. 17, 530.
" 1.2.4	"	1.3693, 15°	Jacobsen. Ber. 17, 2373.
" 1.3.5	"	1.362, 20°	Wroblevsky. A. C. P. 192, 215.
Metaxylyl bromide	$C_6H_4 \cdot C H_3 \cdot C H_2 Br$	1.3711, 23°	Radziszewski and Wispek. Ber. 15, 1745.
Orthoxylyl bromide	"	1.3811, 23°	Radziszewski and Wispek. Ber. 15, 1747.
Dibromorthoxylylene	$C_6H_3 \cdot (C H_3)_2 Br_2$	1.7842, 15°	Jacobsen. Ber. 17, 2377.
Orthoxylylene bromide	$C_6H_4 \cdot (C H_2 Br)_2$	1.934, 0°.8	Colson. Ann. (6), 6, 86.
"	"	1.680, 95°.1	"

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Orthoxylylene bromide	$C_6 H_4 (C H_2 Br)_2$	1.988	Colson. C. R. 104, 429.
Metaxylylene bromide	"	1.734, 0°, s. }	Colson. Ann. (6), 6, 86.
"	"	1.615, 80°, l. }	Colson. C. R. 104, 429.
"	"	1.959	Colson. C. R. 104, 429.
Paraxylylene bromide	"	2.010, s. }	Colson. Ann. (6), 6, 86.
"	"	1.850, 155°, l. }	Colson. C. R. 104, 429.
"	"	2.012	Fittig and J. Storer, J. 20, 704.
Brommesitylene. 1.3.5.6	$C_6 H_2 (C H_3)_3 Br$	1.3191, 10°	Meusel. J. 20, 698.
Isopropylbrombenzene.	$C_6 H_4 C_3 H_7 Br$	1.3223, 13°	Jacobsen. Ber. 12, 420.
" 1.4.	"	1.3014, 15°	Claus and Wimmel. Ber. 13, 903.
Dibromemene	$C_{10} H_{12} Br_2$	1.596	Dafert. M. C. 4, 621.
$\beta$ Bromamylbenzene	$C_{11} H_{15} Br$	1.2834, 21°	Meunier. Ann. (6), 10, 223.
Benzene hexbromide	$C_6 H_6 Br_6$	2.5 +	Stelling and Fittig. Glaser. J. 18, 562.
Bromdibenzyl	$C_{14} H_{13} Br$	1.318, 9°	Wahlforss. J. 18, 564.
Bromnaphthalene	$C_{10} H_7 Br$	1.555	} Nasini and Bernheimer. G. C. I. 15, 50.
"	"	1.503, 12°	
"	"	1.48875, 16°.5	
"	"	1.47496, 28°.1	
"	"	1.42572, 77°.6	
"	"	1.5678, 16°.5	} Gladstone. Bei. 9, 249.
"	"	1.5403, 17°	
"	"	1.5403, 18°	
" $\beta$	"	1.605, 0°	Roux. B. S. C. 45, 514.
$\alpha$ Tetrabromhydrocamphene.	$C_{10} H_{14} Br_4$	2.2042	Royère. Ber. 19, ref. 438.
$\beta$ Tetrabromhydrocamphene.	"	1.93711	" "

## LVI. COMPOUNDS CONTAINING C, H, O, AND BR.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
$\alpha \beta$ Dibrompropyl alcohol	$C_3 H_6 Br_2 O$	2.1682, 0°	} Weger. A. C. P. 221, 61.
"	"	1.7535, 219°	
Monobromtrimethylcarbinol.	$C_4 H_9 Br O$	1.429, 0°	Guareschi and Garzino. J. C. S. 54, 437.
Dibromhexyl alcohol	$C_6 H_{12} Br_2 O$	1.99, 15°	Destrem. Ann. (5), 27, 50.
Bromethyl oxide	$C_4 H_9 Br O$	1.3704, 0°	Henry. C. R. 100, 1007.
Bromacetyl bromide	$C_2 H_2 Br_2 O$	2.317, 21°.5	Naumann. J. 17, 322.
Propionyl bromide	$C_3 H_5 O. Br$	1.465, 14°	Sestini. J. 22, 528.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Dibromacetic acid	$C_2 H_2 Br_2 O_2$	2.25	Perkin and Duppa. J. 11, 285.
Bromobutyric acid	$C_4 H_7 Br O_2$	1.54, 15°	Schneider. J. 14, 457.
Bromoisobutyric acid	"	1.5225, 60°	HellandWaldbauer.
"	"	1.500, 100°	Ber. 10, 448.
Dibromobutyric acid	$C_4 H_6 Br_2 O_2$	1.97	Schneider. J. 14, 458.
Bromostearic acid	$C_{18} H_{35} Br O_2$	1.0653, 20°	Oudemans. J. P. C. 89, 197.
Ethyl bromacetate	$C_4 H_7 Br O_2$	1.5250, 18°	Gladstone. Bei. 9, 249.
Dibromethyl acetate	$C_4 H_6 Br_2 O_2$	1.962, 17°	Kessel. Ber. 10, 1996.
Ethyl brompropionate	$C_5 H_9 Br O_2$	1.396, 11°	Henry. A. C. P. 156, 176.
Methyl dibrompropionate, $\alpha$ .	$C_4 H_6 Br_2 O_2$	1.9043, 0°	Philippi. Gottingen Inaug. Diss. 1873.
" " "	"	1.8973, 12°	"
" " $\alpha \beta$	"	1.9777, 0°	Weger. A. C. P. 221, 61.
" " "	"	1.6140, 205° 8	"
Ethyl dibrompropionate, $\alpha$	$C_5 H_8 Br_2 O_2$	1.7728, 0°	Philippi. Gott. Inaug. Diss. 1873.
" " "	"	1.7536, 12°	"
" " $\beta$	"	1.796, 0°	Munderand Tollens.
" " "	"	1.777, 15°	A. C. P. 167, 222.
" " $\alpha \beta$	"	1.8234	"
" " "	"	1.8279	Weger. A. C. P. 221, 61.
" " "	"	1.4554, 214° 6	"
Propyl dibrompropionate.	$C_6 H_{10} Br_2 O_2$	1.6842, 0°	Philippi. Gott. Inaug. Diss. 1873.
" " $\alpha$ .	"	1.6692, 12°	"
" " $\alpha \beta$	"	1.7014, 0°	Weger. A. C. P. 221, 61.
" " "	"	1.3391, 233°	"
Butyldibrompropionate, $\alpha$	$C_7 H_{12} Br_2 O_2$	1.6008, 0°	Philippi. Gott. Inaug. Diss. 1873.
" " "	"	1.5778, 12°	"
Methyl brombutyrate, $\gamma$	$C_5 H_9 Br O_2$	1.450, 5°	Henry. C. R. 102, 368.
Ethyl brombutyrate	$C_6 H_{11} Br O_2$	1.33, 15°	Schneider. J. 14, 458.
" " "	"	1.345, 12°	Cahours. J. 15, 248.
" " $\gamma$	"	1.363, 5°	Henry. C. R. 102, 368.
Ethyl bromisobutyrate	"	1.328, 0°	Helland Wittekind.
" " "	"	1.300, 19° 5	Ber. 7, 319.
Ethyl bromvalerate, $\alpha$	$C_7 H_{13} Br O_2$	1.226, 18°	Justin. Ber. 17, 2504.
Ethyl bromethylmethylacetate, $\alpha$ .	"	1.2275, 18°	Bocking. A. C. P. 204, 24.
Bromal	$C_2 H Br_3 O$	3.34	Lowig. A. C. P. 3, 305.
Parabromalide	"	3.107	Cloez. J. 12, 433.
Bromacetone	$C_3 H_5 Br O$	1.99	Sokolowsky. B. S. C. 27, 371.
Dibromacetone	$C_3 H_4 Br_2 O$	2.5	"
Hexbromethylmethyl ketone.	$C_4 H_2 Br_6 O$	2.88, 0°	Demole. Ber. 11, 1712.
Ethylene bromhydrin	$C_2 H_4 Br. O H$	1.66, 8°	Henry. Ann. (4), 27, 243.
Bromethylene bromhydrin	$C_2 H_3 Br. Br. O H$	2.35, 0°	Demole. Ber. 9, 50.
Bromethylene bromacetin	$C_5 H_7 Br. Br. C_2 H_3 O_2$	1.58, 0°	Demole. Ber. 9, 51.
Ethylidene bromethylate.	$C_4 H_4 Br. O C_2 H_5$	1.0632, 12°	Henry. C. R. 100, 1007.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Trimethylene bromhydrin	$C_3 H_6 Br. O H$ -----	1.5374, 20° ---	Frühling. Ber. 15, 2622.
Ethoxybromamylene-----	$C_5 H_8 Br. O C_2 H_5$ ---	1.23, 19° -----	Reboul. J. 17, 507.
Hexylene bromhydrin-----	$C_6 H_{12} Br. O H$ -----	1.2959, 11° -----	Henry. C. R. 97, 260.
Ethyl bromacetacetate-----	$C_6 H_9 Br O_3$ -----	1.511, 22° -----	Duisberg. Ber. 15, 1378.
Ethyl dibromacetacetate-----	$C_6 H_8 Br_2 O_3$ -----	1.884, 25° -----	" "
Ethyl tribromacetacetate-----	$C_6 H_7 Br_3 O_3$ -----	2.144, 22° -----	" "
Ethyl tetrabromacetacetate.	$C_6 H_6 Br_4 O_3$ -----	2.401, 17° -----	" "
Dibromide of dibromacetacetic ether.	$C_6 H_8 Br_4 O_3 ?$ -----	2.320, 21° -----	Conrad. A. C. P. 186, 233. Compare Ber. 15, 2133.
Ethyl bromethylacetacetate.	$C_8 H_{13} Br O_3$ -----	1.354 -----	Wedel. A. C. P. 219, 102.
Ethyl dibromethylacetacetate.	$C_8 H_{12} Br_2 O_3$ -----	1.635 -----	Wedel. A. C. P. 219, 103.
Ethyl tribromethylacetacetate.	$C_8 H_{11} Br_3 O_3$ -----	1.860 -----	" "
Ethyl $\beta$ bromacetopropionate.	$C_7 H_{11} Br O_3$ -----	1.439, 15° -----	Conrad and Guthzeit. Ber. 17, 2286.
Ethyl brompropionpropionate.	$C_8 H_{13} Br O_3$ -----	1.337, 15° -----	Israel. A. C. P. 231, 197.
Ethyl dibrompropionpropionate.	$C_8 H_{12} Br_2 O_3$ -----	1.611, 15° -----	" "
Bromallyl alcohol -----	$C_3 H_5 Br O$ -----	1.6, 15° -----	Henry. B. S. C. 18, 232.
Bromallyl acetate -----	$C_5 H_7 Br O_2$ -----	1.57, 12° -----	" "
Allyldibrompropionate. $\beta$	$C_6 H_8 Br_2 O_2$ -----	1.843, 0° ---	Münderand Tollens. A. C. P. 167, 222.
" " -----	" " -----	1.818, 20° ---	
Dibromallyl oxide -----	$C_6 H_8 Br_2 O$ -----	1.7, 17° -----	Henry. B. S. C. 20, 452.
Brommethylallyl oxide-----	$C_4 H_7 Br O$ -----	1.35, 10° -----	Henry. B. S. C. 18, 232.
Bromethylallyl oxide -----	$C_5 H_9 Br O$ -----	1.27, 12° -----	Henry. Ber. 5, 186.
Monobromhydrin-----	$C_3 H_5 Br (O H)_2$ -----	1.717, 4° -----	Veley. C. N. 47, 39.
Dibromhydrin -----	$C_3 H_5 Br_2 O H$ -----	2.11, 10° -----	Berthelot and De Luca. J. 8, 627.
" -----	" -----	2.11, 18° -----	Berthelot and De Luca. J. 9, 601.
" -----	" -----	2.02, 18°.5 -----	Zotta. A. C. P. 174, 87.
Epibromhydrin -----	$C_3 H_5 Br O$ -----	1.615, 14° -----	Berthelot and De Luca. J. 9, 600.
Bromdiethylin -----	$C_8 H_9 Br (O C_2 H_5)_2$ -----	1.258, 8° -----	Henry. Ber. 4, 701.
Diethyl brommaleate -----	$C_8 H_{11} Br O_4$ -----	1.4095, 17°.5 -----	Anschütz and Aschman. Ber. 12, 2284.
Dibromoleic acid -----	$C_{18} H_{32} Br_2 O_2$ -----	1.272, 7°.5 -----	Lefort. J. 6, 451.
Bromcitropyrotartaric anhydride.	$C_5 H_3 Br O_3$ -----	1.935, 23° -----	Bourgoin. J. Ph. C. 26, 234.
Ethyl $\delta$ brompyromucate.	$C_7 H_7 Br O_3$ -----	1.528, 0° -----	Hill and Sanger. A. C. P. 232, 52.
Orthomonobromphenol-----	$C_6 H_5 Br O$ -----	1.6606, 30° ---	Körner. J. 19, 574.
Paramonobromphenol-----	" -----	1.840, 15° -----	Hand. A. C. P. 234, 133.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Brommethylphenol	$C_7 H_7 Br O$	1.494, 9°	Henry. Z. C. 13, 247.
Bromperakresol	"	1.5468, 24°.	Schall and Dralle, Ber. 17, 2531.
Brommethylparakresol	$C_8 H_9 Br O$	1.4182, 24°.	" "
Bromisopropylphenol	$C_9 H_{11} Br O$	1.381, 0°	Silva. B. S. C., Jan., 1870.
"	"	1.957, 12°.	Henry. Ber. 16, 1378.
Bromallylphenol ether	$C_9 H_9 Br O$	1.4028, 11°	"
Brommethylengenol	$C_{11} H_{13} Br O_2$	1.3959, 0°	Wassermann. C. R. 88, 1207.
Benzoyl bromide	$C_7 H_5 O. Br$	1.5700, 15°	Claissen. Ber. 14, 2473.
Monobromcamphor	$C_{10} H_{15} Br O$	1.437	Schroder. Ber. 13, 1070.
"	"	1.449	"
Santonyl bromide	"	1.4616	Carnelutti and Nasini. Ber. 13, 2210.

## LVII. BROMINE COMPOUNDS CONTAINING NITROGEN.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Brompiperin	$C Br_3 N O_2$	2.811, 12°.	Bolas and Groves. Z. C. 13, 414.
"	"	2.816, 13°	Gladstone. Ber. 9, 249.
Tetranitroethylene bromide.	$C_2 (N O_2)_4 Br_2$	1.25, 14°	Villiers. J. C. S. 42, 815.
Bromonitric glycol	$C_2 H_4 Br N O_3$	1.735, 8°	Henry. Ann. (4), 27, 243.
Bromallyl nitrate	$C_3 H_4 Br N O_3$	1.5, 13°	Henry. B. S. C. 18, 232.
Nitrobromotoluene. B. 269°	$C_7 H_5 Br N O_2$	1.612, 20°	Wroblevsky. Z. C. 13, 240.
" B. 256°	"	1.631, 18°	Wroblevsky. Z. C. 13, 166.
Bromtoluidine. B. 240°	$C_7 H_5 Br N$	1.510, 20°	Wroblevsky. A. C. P. 168, 117.
" B. 255°-260°	"	1.442, 19°	Wroblevsky. A. C. P. 192, 203.
Brompyridine	$C_5 H_4 Br N$	1.645, 0°	Ciamician and Dennstedt. Ber. 15, 1174.
"	"	1.646, 0°	Danesi. Ber. 15, 1177.
"	"	1.632, 10°	Hofmann. Ber. 16, 589.

## LVIII. COMPOUNDS CONTAINING C, H, AND I.

## 1st. Iodides of the Paraffin Series.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl iodide	$C H_3 I$	2.227, 22°	Dumas and Peligot. Ann. (2), 58, 30.
" "	"	2.19922, 0°	Pierre. C. R. 27, 213.
" "	"	2.2636, 20°	Haagen. P. A. 131, 117.
" "	"	2.269, 25°	Linnemann. Z. C. 11, 285.
" "	"	2.2905, 16°	Sigel. A. C. P. 170, 345.
" "	"	2.1905, 42°	Ramsay. J. C. S. 35, 463.
" "	"	2.28517, 15°	Perkin. J. P. C. (2), 31, 481.
" "	"	2.25288, 25°	
" "	"	2.3346, 0°	Dobriner. A. C. P. 243, 23.
" "	"	2.2146, 42°.8	
Ethyl iodide	$C_2 H_5 I$	1.9206, 23°.3	Gay Lussac. Ann. (1), 91, 91.
" "	"	1.92, 16°	Marchand. J. P. C. 33, 188.
" "	"	1.97546, 0°	Pierre. C. R. 27, 213.
" "	"	1.9567, 5°-10°	
" "	"	1.9457, 10°-15°	Regnault. P. A. 62, 50.
" "	"	1.9348, 15°-20°	
" "	"	1.9464, 16°	Frankland. J. 2, 412.
" "	"	1.9309, 15°	Mendelejeff. J. 13, 7.
" "	"	1.98, 4°	Berthelot. A. C. P. 115, 114.
" "	"	1.927, 20°	Linnemann. A. C. P. 144, 133.
" "	"	1.9265, 19°	Linnemann. A. C. P. 148, 251.
" "	"	1.935 } 20°	Haagen. P. A. 131, 117.
" "	"	1.938 }	
" "	"	1.979, 0°	Pierre and Puchot. Ann. (4), 22, 261.
" "	"	1.907, 30°.4	
" "	"	1.9444, 14°.5	Linnemann. A. C. P. 160, 193.
" "	"	1.944, 15°	Crismer. Ber. 17, 652.
" "	"	1.9313, 14°	Gladstone. Ber. 9, 249.
" "	"	1.8111, 72°.2	Schiff. Ber. 19, 560.
" "	"	1.96527, 4°	Perkin. J. P. C. (2), 31, 481.
" "	"	1.94332, 15°	
" "	"	1.92431, 25°	Dobriner. A. C. P. 243, 23.
" "	"	1.9795, 0°	
" "	"	1.8156, 72°.5	Berthelot and De Luca. J. 7, 452.
Propyl iodide	$C_3 H_7 I$	1.789, 16°	
" "	"	1.7012, 21°	Linnemann. J. 21, 433.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Propyl iodide	$C_3H_7I$	1.7343, 16°	Chapman and Smith. J. C. S. 22, 195.
" "	"	1.782, 0°	Rossi. A. C. P. 159, 79.
" "	"	1.7472, 16°	Linnemann. A. C. P. 160, 195.
" "	"	1.7277, 23°	Linnemann. A. C. P. 161, 25.
" "	"	1.7610, 16°	Linnemann. A. C. P. 161, 34.
" "	"	1.78635, 0°	Brown. J. C. S. 32, 837.
" "	"	1.75035, 19°.27	
" "	"	1.74772, 20°.79	
" "	"	1.74628, 20°.91	
" "	"	1.7427, 20°	Brühl. A. C. P. 203, 1.
" "	"	1.7483, 14°	De Heen. Bei. 5, 105.
" "	"	1.5867, 102°.5	Zander. A. C. P. 214, 181.
" "	"	1.7838, 0°	Chancl. B. S. C. 39, 648.
" "	"	1.7508, 16°	Gladstone. Bei. 9, 249.
" "	"	1.7842, 0°	Pierre and Puchot. Ann. (4), 22, 286.
" "	"	1.7674, 9°.1	
" "	"	1.6843, 52°.6	
" "	"	1.6373, 75°.3	Perkin. J. P. C. (2), 31, 481.
" "	"	1.76732, 16°	
" "	"	1.75853, 15°	Dobriner. A. C. P. 243, 23.
" "	"	1.7829, 0°	
" "	"	1.585, 102°.5	Linnemann. J. 18, 489.
Isopropyl iodide	"	1.70, 15°	
" "	"	1.714, 16°	Erlenmeyer. A. C. P. 126, 309.
" "	"	1.73, 0°	Simpson. A. C. P. 129, 128.
" "	"	1.725, 0°	Wurtz. See A. C. P. 136, 43.
" "	"	1.69, 15°	Linnemann. A. C. P., 3d Supp., 265.
" "	"	1.71, 15°	Linnemann. A. C. P., 3d Supp., 267.
" "	"	1.735, 0°	Erlenmeyer. A. C. P. 139, 229.
" "	"	1.711, 17°	H. L. Buff. A. C. P., 4th Supp., 129.
" "	"	1.71732, 17°	
" "	"	1.562442, 93°	Linnemann. A. C. P. 140, 178.
" "	"	1.70, 18°	
" "	"	1.715, 15°.5	Siersch. A. C. P. 140, 142.
" "	"	1.7109, 15°	Linnemann. A. C. P. 161, 18.
" "	"	1.744, 0°	Brown. J. C. S. 32, 837.
" "	"	1.70526, 19°.8	
" "	"	1.70506, 20°.14	
" "	"	1.70457, 21°.09	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isopropyl iodide-----	$C_3H_7I$ -----	1.7033, 20°----	Brühl. A. C. P. 203, 1.
“ “-----	“-----	1.5650, 89°----	Zander. A. C. P. 214, 181.
“ “-----	“-----	1.7157, 14°----	Gladstone. Bei. 9, 249.
“ “-----	“-----	1.71630, 15°-----	Perkin. J. P. C. (2), 31, 481.
“ “-----	“-----	1.70049, 25°-----	
Butyl iodide-----	$C_4H_9I$ -----	1.643, 0°-----	Lieben and Rossi. A. C. P. 158, 137.
“ “-----	“-----	1.6136, 20°-----	
“ “-----	“-----	1.5894, 40°-----	
“ “-----	“-----	1.5804, 18°-----	Linnemann. Ann. (4), 27, 268.
“ “-----	“-----	1.6166, 20°-----	Brühl. A. C. P. 203, 1.
“ “-----	“-----	1.6172, 14°-----	De Heen. Bei. 5, 105.
“ “-----	“-----	1.6476, 0°-----	Dobriner. A. C. P. 243, 23.
“ “-----	“-----	1.4308, 129°.9-----	
Secondary butyl iodide-----	“-----	1.632, 0°-----	De Luynes. J. 17, 499.
“ “-----	“-----	1.600, 20°-----	
“ “-----	“-----	1.584, 30°-----	
“ “-----	“-----	1.6263, 0°-----	Lieben. J. 21, 439.
“ “-----	“-----	1.6111, 10°-----	
“ “-----	“-----	1.5952, 20°-----	
“ “-----	“-----	1.5787, 30°-----	Wurtz. A. C. P. 152, 23.
“ “-----	“-----	1.634, 0°-----	
Isobutyl iodide-----	“-----	1.604, 19°-----	Wurtz. J. 7, 573.
“ “-----	“-----	1.643, 0°-----	Wurtz. J. 20, 573.
“ “-----	“-----	1.6301, 0°-----	Chapman and Smith. J. C. S. 22, 156.
“ “-----	“-----	1.6032, 16°-----	
“ “-----	“-----	1.54816, 50°-----	Pierre and Puchot. Ann. (4), 22, 317.
“ “-----	“-----	1.6345, 0°-----	
“ “-----	“-----	1.6214, 8°.3-----	
“ “-----	“-----	1.6387, 56°.4-----	Linnemann. A. C. P. 160, 195.
“ “-----	“-----	1.464, 98°.8-----	
“ “-----	“-----	1.6081, 19°.5-----	Linnemann. Ann. (4), 27, 268.
“ “-----	“-----	1.592, 22°-----	Erlenmeyer and Hell. A. C. P. 160, 257.
“ “-----	“-----	1.6433, 0°-----	
“ “-----	“-----	1.6278, 10°-----	Brauner. A. C. P. 192, 69.
“ “-----	“-----	1.6114, 20°-----	
“ “-----	“-----	1.6401, 0°-----	Brühl. A. C. P. 203, 1.
“ “-----	“-----	1.6050, 20°-----	
“ “-----	“-----	1.6056, 20°-----	Gladstone. Bei. 9, 249.
“ “-----	“-----	1.5982-----	Schiff. Ber. 19. 560.
“ “-----	“-----	1.4335, 114°.5-----	Perkin. J. P. C. (2), 31, 481.
“ “-----	“-----	1.61385, 15°-----	
“ “-----	“-----	1.60066, 25°-----	Two lots. Puchot. Ann. (5), 28, 546.
Trimethylcarbyl iodide. ?-----	“-----	1.587, 0°-----	
“ “-----	“-----	1.501, 50°.1-----	
“ “-----	“-----	1.571, 0°-----	Lieben and Rossi. A. C. P. 159, 70.
“ “-----	“-----	1.479, 53°-----	
Normal pentyl iodide-----	$C_5H_{11}I$ -----	1.5435, 0°-----	
“ “-----	“-----	1.5174, 20°-----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Normal pentyl iodide	$C_5H_{11}I$	1.4961, 40°	Lieben and Rossi, A. C. P. 159, 70.
" " "	"	1.5444, 0°	( Dobriner, A. C. P. 243, 20.
" " "	"	1.3128, 151°·7	
Amyl iodide	"	1.51113, 11°·5	Frankland J. 3, 478.
" " "	"	1.5277, 0°	Frankland.
" " "	"	1.4936, 20°	Grimm, J. 7, 543.
" " "	"	1.4676, 0°	Kopp, A. C. P. 95, 307.
" " "	"	1.4387, 22°·3	
" " "	"	1.5087, 15°·8	Mendelejeff, J. 13, 7.
" " "	"	1.4734, 20°	Haagen, P. A. 131, 117.
" " "	"	1.5005, 14°	De Heen, Bei. 5, 105.
" " "	"	1.5413, 0°	Flawitzky, Ber. 15, 11.
" " "	"	1.5084, 23°	
" " "	"	1.5048, 14°	Gladstone, Bei. 9, 249.
" " "	"	1.3098, 148°	Schiff, Ber. 19, 560.
" " "	"	1.5100, 15°	Perkin, J. P. C. 12, 31, 481.
" " Active	"	1.49811, 25°	
" " "	"	1.51, 15°	Le Bel, B. S. C. 25, 545.
" " "	"	1.5125, 16°	Just, A. C. P. 220, 150.
Methylpropylcarhyl iodide	"	1.537, 0°	( Wurtz, J. 21, 446.
" " "	"	1.5219, 11°	
" " "	"	1.539, 0°	( Wagner and Saytzeff, A. C. P. 179, 318.
" " "	"	1.510, 20°	
" " "	"	1.499, 15°	Romburgh, Ber. 16, 392.
Diethylcarhyl iodide	"	1.528, 0°	( Wagner and Saytzeff, A. C. P. 175, 365.
" " "	"	1.505, 16°	
" " "	"	1.4792	Gladstone, Bei. 9, 249.
" " "	"	1.528, 0°	( Wagner and Saytzeff, A. C. P. 179, 318.
" " "	"	1.501, 20°	
Dimethylethylcarhyl iodide	"	1.5207, 0°	Flawitzky, A. C. P. 179, 348.
" " "	"	1.4954, 19°	
" " "	"	1.524, 0°	Wischegradsky, A. C. P. 190, 331.
" " "	"	1.497, 19°	
" " "	"	1.522, 0°	Winogradow, A. C. P. 191, 125.
" " "	"	1.498, 18°	
Hexyl iodide	$C_6H_{13}I$	1.431, 19°	Pelouze and Cahours, J. 16, 526.
" " "	"	1.4115	Franchimont and Zuecke, C. N. 24, 263.
" " "	"	1.4607, 0°	( Lieben and Janacek, J. R. C. 5, 156.
" " "	"	1.4363, 20°	
" " "	"	1.4178, 40°	
" " "	"	1.4661, 0°	( Dobriner, A. C. P. 243, 23.
" " "	"	1.2165, 177°·1	
Secondary hexyl iodide	"	1.439	Wanklyn and Erlenmeyer, J. 14, 732.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Secondary hexyl iodide	$C_6 H_{13} I$	1.4447, 0°	Wanklyn and Erlenmeyer. J. 16, 518. Hecht. A. C. P. 165, 146.
" " "	"	1.3812, 50°	
" " "	"	1.4526, 0°	
" " "	"	1.4589, 0°	Krusemann. Ber. 9, 1468.
" " "	"	1.3938, 50°	
" " "	"	1.4477, 0°	
" " "	"	1.3808, 50°	
" " "	"	1.4487, 0°	
" " "	"	1.3839, 50°	
" " "	"	1.4193	Gladstone. Bei. 9, 249.
" " "	"	1.42694, 15°	Perkin. J. P. C. (2), 31, 481.
" " "	"	1.41631, 25°	
Dimethylisopropylcarbyl iodide.	"	1.3939, 0°	Pawlow. A. C. P. 196, 122.
" " "	"	1.3725, 19°	
Pinacolic iodide	"	1.4739, 0°	Friedel and Silva. J. C. S. (2), 11, 488.
Normal heptyl iodide	$C_7 H_{15} I$	1.346, 16°	Cross. J. C. S. 32, 123.
" " "	"	1.4008, 0°	Dobriner. A. C. P. 243, 23.
" " "	"	1.1344, 203°.8	
Dipropylcarbyl iodide	"	1.20, 20°	Kurtz. A. C. P. 161, 205.
Normal octyl iodide	$C_8 H_{17} I$	1.338, 16°	Zineke. J. 22, 371.
" " "	"	1.355, 0°	Krafft. Ber. 19, 2218.
" " "	"	1.337, 16°	
" " "	"	1.34069, 15°	Perkin. J. P. C. (2), 31, 481.
" " "	"	1.33163, 25°	
" " "	"	1.3533, 0°	Dobriner. A. C. P. 243, 23.
" " "	"	1.075, 225°.5	
Methylhexylcarbyl iodide	"	1.310, 16°	Bouis. J. 8, 526.
" " "	"	1.330, 0°	De Clermont. J. 21, 449.
" " "	"	1.314, 21°	
Normal nonyl iodide	$C_9 H_{19} I$	1.3052, 0°	Krafft. Ber. 19, 2218
" " "	"	1.2874, 16°	
Normal decyl iodide	$C_{10} H_{21} I$	1.2768, 0°	" "
" " "	"	1.2599, 16°	

## 2d. Miscellaneous Compounds.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methylene iodide	$C_2H_2I_2$	3.342, 5°	Butlerow, J. 11, 420.
"	"	3.3188, 19°	Gladstone, Bei. 9, 249.
"	"	3.326, 15° .5	
"	"	3.328, 15°	
"	"	3.2343, 16°	
"	"	3.289, 33°	Brauns, Bei. 11, 698.
"	"	3.189, 74°	
"	"	3.28528, 15°	Perkin, J. P. C. (2), 31, 481.
"	"	3.26555, 25°	
Ethylene iodide	$C_2H_4I_2$	2.07	E. Kopp, J. P. C. 33, 182.
Ethylidene iodide	"	2.84, 0°	Gustavson, B. S. C. 22, 13.
Propylene iodide	$C_3H_6I_2$	2.490, 18° .5	Berthelot and De Luca, J. 7, 453.
"	"	2.5631, 19°	Freund, J. C. S. 42, 156.
Trimethylene iodide	"	2.59617, 4°	Perkin, Ber. 18, 221.
"	"	2.57612, 15°	
"	"	2.56144, 25°	
Allylene dihydriodate	"	2.15, 0°	Oppenheim, J. 18, 493.
"	"	2.1158, 0°	Semenoff, J. 18, 494.
$\beta$ Butylene iodide	$C_4H_8I_2$	2.291, 0°	Wurtz, C. R. 97, 473.
Diallyl dihydriodate	$C_6H_{12}I_2$	2.024, 0°	Wurtz, J. 17, 511.
Iodoform	$CHI_3$	2.00	Weltzien's Zusammenstellung.
"	"	4.09	Brügelmann, Ber. 17, 2359.
Acetylene iodide	$C_2H_2I_2$	3.303, 21° .8	Sabancjef, A. C. P. 178, 119-121.
"	"	2.942, 21° .1	
Iodethylene (vinyl iodide)	$C_2H_3I$	1.98	Regnault.
"	"	2.09, 0°	Gustavson, Ber. 7, 731.
Allyl iodide	$C_3H_5I$	1.789, 16°	Berthelot and De Luca.
"	"	1.746, 0°	Wojcikoff, J. 16, 495.
"	"	1.848, 12°	Linnemann, A. C. P., 3d Supp., 267.
"	"	1.839, 14°	Linnemann, A. C. P., 3d Supp., 264.
"	"	1.8696, 0°	Zander, A. C. P. 214, 181.
"	"	1.6601, 102° .6	
"	"	1.846, 15°	Romburgh, Ber. 16, 392.
"	"	1.82403, 15°	Perkin, J. P. C. (2), 31, 481.
"	"	1.80776, 25°	
Allylene hydriodate	"	1.8346, 0°	Semenoff, J. 18, 494.
"	"	1.8028, 16°	
Allylene iodide	$C_3H_4I_2$	2.62, 0°	Oppenheim, J. 18, 493.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Iodallylene -----	$C_3 H_3 I$ -----	1.7 -----	Liebermann. J. 18, 495.
Propargyl iodide -----	" -----	2.0177, 0° -----	Henry. Ber. 17, 1132.
Diallyl hydriodate -----	$C_6 H_{11} I$ -----	1.497, 0° -----	Wurtz. J. 17, 514.
Iodhexylene -----	" -----	1.92, 10° -----	Destrem. Ann. (5), 27, 50.
Iodobenzene -----	$C_6 H_5 I$ -----	1.69 -----	Schutzenberger. J. 14, 348.
" -----	" -----	1.833 -----	Kekulé. J. 19, 554.
" -----	" -----	1.64, 15° -----	Ladenburg. A. C. P. 159, 251.
" -----	" -----	1.8403, 11° -----	} Schiff. Ber. 19, 560.
" -----	" -----	1.7732, 56°.8 -----	
" -----	" -----	1.7374, 79°.2 -----	
" -----	" -----	1.6486, 135°.5 -----	
" -----	" -----	1.8578, 0° -----	} Schiff. Bei. 9, 559.
" -----	" -----	1.5612, 187°.5 -----	
Orthiodotoluene -----	$C_7 H_7 I$ -----	1.698, 20° -----	Beilstein and Kuhlberg. A.C.P. 158, 349.
Metaiodotoluene -----	" -----	1.697, 20° -----	Beilstein and Kuhlberg. Z.C. 13, 103.
Benzyl iodide -----	" -----	1.7335, 25° -----	Lieben. J. 22, 425.

## LIX. COMPOUNDS CONTAINING C, H, I, O, OR C, H, I, N.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tetraiodmethyl oxide -----	$C_2 H_2 I_4 O$ -----	3.345 -----	Brüning. J. 10, 432.
Moniodethyl oxide -----	$C_4 H_9 I O$ -----	1.6924, 0° -----	Henry. C. R. 100, 1007.
Acetyl iodide -----	$C_2 H_3 O. I$ -----	1.98, 17° -----	Guthrie. J. 10, 344.
Propyl iodacetate -----	$C_5 H_9 I O_2$ -----	1.6794, 7° -----	Henry. C. R. 100, 114.
Methyl $\beta$ iodpropionate -----	$C_4 H_7 I O_2$ -----	1.8408, 7° -----	" "
Ethyl $\beta$ iodpropionate -----	$C_5 H_9 I O_2$ -----	1.707, 8° -----	" "
" " -----	" -----	1.6789, 15° -----	Otto. Ber. 21, 98.
Methyl $\gamma$ iodbutyrate -----	" -----	1.666, 5° -----	Henry. C. R. 102, 368.
Iodaldehyde -----	$C_2 H_3 I O$ -----	2.14, 20° -----	Chautard. C. R. 102, 118.
Iodacetone -----	$C_3 H_5 I O$ -----	2.17, 15° -----	Clermont and Chautard. C.R. 100, 745.
Iodhydrodiglycide -----	$C_6 H_{11} I O_3$ -----	1.783 -----	Berthelot and De Luca.
Diiodhydrin -----	$C_3 H_6 I_2 O$ -----	2.4 -----	Nahmacher. Ber. 5, 356.
Epiiodhydrin -----	$C_3 H_5 I O$ -----	2.03, 13° -----	Reboul. J. 13, 459.
Santonyl iodide -----	" -----	1.3282 -----	Carnelutti and Nasini. Ber. 13, 2210.
Iodchinolin -----	$C_9 H_6 I N$ -----	1.9323 -----	} La Coste. Ber. 18, 780.
" -----	" -----	1.9345 -----	

## IX. COMPOUNDS CONTAINING TWO OR MORE HALOGENS.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chlorobromomethane -----	$C H_2 Cl Br$ -----	1.9907, 19° ---	Henry. C. R. 101, 599.
Bromochloroform -----	$C H Cl_2 Br$ -----	1.9254, 15° ---	Jacobsen and Neumeister. Ber. 15, 599.
“ -----	“ -----	1.983 -----	Arnhold. A. C. P. 240, 192.
Chlorobromoform -----	$C H Cl Br_2$ -----	2.4450, 15° ---	Jacobsen and Neumeister. Ber. 15, 599.
“ -----	“ -----	2.447, 20° ---	Dyson. J. C. S. 43, 36.
Ethylene chlorobromide --	$C H_2 Cl. C H_2 Br$ --	1.700, 18° ---	Henry. A. C. P. 156, 15.
“ “ --	“ --	1.705, 11° ---	Montgolfier and Giraud. C. R. 88, 654.
Ethylidene chlorobromide	$C H_3. C H Cl Br$ ---	1.61, 14° -----	Reboul. A. C. P. 155, 215.
“ “ --	“ --	1.666, 16° -----	Denzel. Ber. 11, 1739.
Chlorodibromomethane -----	$C H_3. C Br_2 Cl$ -----	2.134, 16° -----	“ “
“ -----	$C H_2 Br. C H Br Cl$ -----	2.268, 16° -----	“ “
Dichlorobromomethane -----	$C H_3. C Br Cl_2$ -----	1.752, 16° -----	Denzel. Ber. 11, 1740.
“ -----	$C H_2 Cl. C H Br Cl$ -----	2.113, 0° -----	Lescœur. J. C. S. 34, 718.
“ -----	“ -----	1.86850, 15° } -----	Perkin. J. P. C. (2), 32, 523.
“ -----	“ -----	1.85420, 25° } -----	
“ -----	$C H Cl_2. C H_2 Br$ ---	1.238, 15°. ? ---	Delnere. Bull. Acad. Belg. (3), 13, 251.
Bromomethylchloroform --	$C Cl_3. C H_2 Br$ -----	1.8839, 0° -----	Henry. C. R. 98, 371.
Chlorotribromomethane -----	$C H_2 Br. C Br_2 Cl$ ---	2.602, 16° -----	Denzel. Ber. 11, 1739.
Dichlorodibromomethane ---	$C H_2 Br. C Br Cl_2$ --	2.270, 16° -----	Denzel. Ber. 11, 1740.
“ -----	$C H Cl_2. C H Br_2$ -----	2.391, 19° -----	Sabancjeff. Ber. 16, 1221.
Trichlorodibromomethane -----	$C_2 H Cl_3 Br_2$ -----	2.317, 0° -----	Paterno. J. P. C. (2), 5, 98.
“ -----	“ -----	2.295, 19°.5 -----	
“ -----	“ -----	2.129, 100° -----	
Chlorotetrabromomethane -----	$C H Br_3. C Br_2 Cl$ -----	3.366, 16° -----	Denzel. Ber. 11, 1740.
Chlorodibromomethylene ---	$C_2 H Br_2 Cl$ -----	2.275, 16° -----	Denzel. Ber. 11, 1741.
Dichlorobromomethylene ---	$C_2 H Cl_2 Br$ -----	1.906, 16° -----	“ “
Acetylene chlorobromide --	$C_2 H_2 Cl Br$ -----	1.8157, 0° -----	Plimpton. J. C. S. 41, 391.
“ “ --	“ -----	1.7787, 0° -----	Sabancjeff. Ber. 16, 1221.
“ “ --	“ -----	1.7467, 19° -----	
Propylene chlorobromide --	$C_3 H_6 Cl Br$ -----	1.62, 16° -----	Reboul. A. C. P. 155, 216.
“ “ --	$C H_3. CH Cl. C H_2 Br$ -----	1.585, 0° -----	Friedel and Silva. B. S. C. (2), 17, 532.
“ “ --	“ -----	1.475, 18° -----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Propylene chlorobromide.	$C_3H_3CH_2CHClBr$	1.60, 20°	Reboul. Ber. 7, 1037.
" "	$CH_3CHBrCH_2Cl$	1.474, 21°	" "
" "	$CH_2BrCH_2CH_2Cl$	1.63, 8°	" "
Dibromochloropropylene	$C_3H_3CClBrCH_2Br$	2.064, 0°	Friedel. J. 12, 337.
Chlorodibromhydrin	$C_3H_5ClBr_2$	2.085, 9°	Reboul. J. 13, 461.
"	"	2.088	Oppenheim. J. 21, 341.
"	"	2.004, 15°	Darnstaedter. J. 22, 375.
Chlorobromhydroglycide	$C_3H_4ClBr$	1.69, 14°	Reboul. J. 13, 461.
Derivative of chlorobromhydroglycide.	$C_3H_4ClBr_3$	2.39, 14°	Reboul. J. 13, 462.
Derivative of epidichlorhydrin.	$C_3H_4Cl_2Br_2$	2.10, 13°	" "
Bromallyl chloride	$C_3H_4BrCl$	1.63, 11°	Henry. B. S. C. 18, 232.
Chloracetyl bromide	$C_2H_2ClO.Br$	1.913, 9°	Wilde. J. 17, 320.
Bromacetyl chloride	$C_2H_2BrO.Cl$	1.908, 9°	Wilde. J. 17, 319.
Trichloracetyl bromide	$C_2Cl_3O.Br$	1.900, 15°	Hofferichter. J. P. C. (2), 20, 195.
Hexchlortetrabromethyl oxide.	$C_4Cl_6Br_4O$	2.5, 18°	Malaguti. Ann. (3), 16, 25.
Chlorobromethyl acetate	$C_4H_6ClBrO_2$	1.6499, 11°.4	Henry. C. R. 97, 1308.
Dichlorodibromethyl acetate.	$C_6H_6Cl_2Br_2O_3$	1.956, 19°	Conrad and Guthzeit. Ber. 16, 1551.
Tribromochloracetone	$C_3H_2ClBr_3O$	2.270	Cloëz. Ann. (6), 9, 145.
Bromochloral	$C_2HCl_2BrO$	1.9176, 15°	Jacobsen and Neumeister. Ber. 15, 599.
Chlorobromal	$C_2HBr_2ClO$	2.2793, 15°	" "
Chlorobromhydrin	$C_3H_6ClBrO$	1.740, 12°	Reboul. J. 13, 458.
"	"	1.7641, 9°	Henry. Z. C. 13, 604.
Phycite bromodichlorhydrin.	$C_3H_5Cl_2BrO$	2.1719, 0°	Wolff. A. C. P. 150, 32.
"	"	2.1426, 17°.5	
Chlorodibromnitromethane.	$CClBr_2NO_2$	2.421, 15°	Tscherniak. Ber. 8, 610.
Chlorobromnitrin	$C_3H_5ClBrNO_3$	1.7904, 9°	Henry. Ber. 4, 701.
Chloriodomethane	$CH_2ClI$	2.49, 20°	Sakurai. J. C. S. 41, 362.
"	"	2.447, 11°	Sakurai. J. C. S. 47, 198.
"	"	2.444, 14°.5	
Chloriodoform	$CHI_2Cl$	1.96	Bouchardat. A. C. P. 22, 230.
"	"	2.454, 0°	Borodine. J. 15, 391.
"	"	2.403, 21°.5	
Ethylene chloriodide	$C_2H_4ClI$	2.151, 0°	Simpson. J. 16, 485.
"	"	2.39, 20°	Maumené. J. 22, 345.
"	"	2.16439, 0°	Thorpe. J. C. S. 37, 371.
"	"	1.87915, 140°.1	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Chloriodethylene .....	$C_2 H_2 Cl I$ .....	2.1431, 0° .....	Henry. C. R. 98, 742.
Acetylene chloriodide .....	" .....	2.2298 .....	Plimpton. J. C. S. 41, 391.
" " .....	" .....	2.154, 0° .....	Sabanejef. Ber. 16, 1221.
" " .....	" .....	2.1175, 19° .....	
Propylene chloriodide .....	$C_3 H_6 Cl I$ .....	1.932, 0° .....	Simpson. J. 16, 494.
" " .....	" .....	1.824 .....	Oppenheim. J. 20, 571.
$\beta$ Chlorallyl iodide .....	$C_3 H_4 Cl I$ .....	1.977, 15° .....	Romburgh. Ber. 16, 393.
$\alpha$ Chlorallyl iodide .....	" .....	1.880 } 15° .....	
" " .....	" .....	1.913 } .....	
Dichloriodhydrin .....	$C_3 H_5 Cl_2 I$ .....	2.0476, 9° .....	Henry. Ber. 4, 701.
Orthochloriodobenzene .....	$C_6 H_4 Cl I$ .....	1.928, 24° 5' .....	Beilstein and Kurbatow. A. C. P. 176, 43.
Chloriodotoluene .....	$C_7 H_6 Cl I$ .....	1.702, 19° .....	Beilstein and Kuhlberg. A. C. P. 156, 82.
" .....	" .....	1.716, 17° .....	Wroblevsky. Z. C. 13, 164.
" .....	" .....	1.770, 19° 5' .....	" "
Chloriodethyl acetate .....	$C_4 H_6 Cl I O_2$ .....	1.9540, 18° .....	Henry. C. R. 97, 1308.
Iodochlorhydrin .....	$C_3 H_6 Cl I O_2$ .....	2.06, 10° .....	Reboul. J. 13, 458.
Bromiodomethane .....	$C H_2 Br I$ .....	2.9262, 16° 8' .....	Henry. C. R. 101, 599.
Ethylene bromiodide .....	$C H_2 Br. C H_2 I$ .....	2.7, 1° .....	Reboul. A. C. P. 155, 214.
" " .....	" .....	2.516, 29° .....	Simpson. C. N. 29, 53.
" " .....	" .....	2.514, 30° .....	Friedel. C. R. 79, 164.
" " .....	" .....	2.705, 18° s. .....	Lagermarek. Ber. 7, 907.
Ethylidene bromiodide .....	$C H_3. C H Br I$ .....	2.5, 1° .....	Reboul. A. C. P. 155, 213.
" " .....	" .....	2.452, 16° .....	Lagermarek. Ber. 7, 907.
Dibromiodethane .....	$C_2 H_3 Br_2 I$ .....	2.86, 29° .....	Simpson. C. N. 29, 53.
Bromiodethylene .....	$C_2 H_2 Br I$ .....	2.5651, 0° .....	Henry. C. R. 98, 742.
Acetylene bromiodide .....	" .....	2.750, 0° s. .....	Plimpton. J. C. S. 41, 391.
" " .....	" .....	2.6272, 17° 5' .....	
Propylene bromiodide .....	$C_3 H_6 Br I$ .....	2.2, 11° .....	Reboul. A. C. P. 155, 214.
Paraiodorthobromtoluene .....	$C_7 H_6 Br I$ .....	2.014, 20° 7' .....	Wroblevsky. Z. C. 13, 165.
Metaiodorthobromtoluene .....	" .....	2.139, 18° .....	Wroblevsky. Z. C. 14, 210.
Chlorobromiodethane .....	$C_2 H_3 Cl Br I$ .....	2.53, 0° .....	Henry. C. R. 98, 680.
Chlorobromiodhydrin .....	$C_3 H_3 Cl Br I$ .....	2.225, 9° .....	Henry. Ber. 4, 701.

## LXI. ORGANIC COMPOUNDS OF FLUORINE.\*

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Fluobenzene -----	$C_6 H_5 F$ -----	1.024, 20° -----	Wallach. A. C. P. 235, 255.
“ -----	“ -----	1.0236, 20° -----	Wallach and Heusler. A. C. P. 243, 221.
Paradifluobenzene -----	$C_6 H_4 F_2$ -----	1.11 -----	Wallach and Heusler. A. C. P. 243, 219.
Parafluotoluene -----	$C_7 H_7 F$ -----	.992, 25° -----	Wallach. A. C. P. 235, 255.
Parafluochlorobenzene -----	$C_6 H_4 Cl F$ -----	1.226, 15° -----	Wallach and Heusler. A. C. P. 243, 219.
Parafluobrombenzene -----	$C_6 H_4 Br F$ -----	1.593, 15° -----	“ “
Parafluoanilin -----	$C_6 H_6 N F$ -----	1.153, 25° -----	Wallach. A. C. P. 235, 255.
Parafluonitrobenzene -----	$C_6 H_4 N O_2 F$ -----	1.326, l. -----	“ “

## LXII. ORGANIC COMPOUNDS OF SULPHUR.

## 1st. Compounds Containing C, H, and S.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl sulphide -----	$(C H_3)_2 S$ -----	.845, 21° -----	Regnault. Ann. (2), 71, 391.
Ethyl sulphide -----	$(C_2 H_5)_2 S$ -----	.825, 20° -----	Regnault. Ann. (2), 71, 388.
“ “ -----	“ -----	.83672, 0° -----	Pierre. C. R. 27, 213.
“ “ -----	“ -----	.83676, 20° -----	Nasini. Ber. 15, 2882.
Propyl sulphide -----	$(C_3 H_7)_2 S$ -----	.814, 17° -----	Cahours. B. S. C. 19, 301.
Ethyl amyl sulphide -----	$(C_2 H_5) (C_5 H_{11}) S$ -----	.852, 0° -----	Saytzeff. J. 19, 529.
Butyl sulphide -----	$(C_4 H_9)_2 S$ -----	.849, 0° -----	Saytzeff. J. 19, 528.
“ “ -----	“ -----	.8386, 16° -----	Grabowsky and Saytzeff. A. C. P. 175, 351.
“ “ -----	“ -----	.8317, 23° -----	Reymann. J. C. S. (2), 13, 141.
Isobutyl sulphide -----	“ -----	.8863, 10° -----	Beckman. J. P. C. (2), 17, 446.
Isoamyl sulphide -----	$(C_5 H_{11})_2 S$ -----	.84314, 20° -----	Nasini. Ber. 15, 2883.
Oetyl sulphide -----	$(C_8 H_{17})_2 S$ -----	.8419, 17° -----	Möslinger. Ber. 9, 1004.

\* See also under organic compounds of boron.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl disulphide	$C_2 H_6 S_2$	1.046, 18°	Cochours. Ann. (3), 18, 258.
" "	"	1.06358, 0°	Pierre. C. R. 27, 213.
Ethyl disulphide	$C_4 H_{10} S_2$	About 1.00	Morin. P. A. 48, 484.
" "	"	.99267, 20°	Nasini. Ber. 15, 2882.
Amyl disulphide	$C_{10} H_{22} S_2$	.918, 18°	O. Henry. J. 1, 700.
Methyl trisulphide	$C_3 H_8 S_3$	1.2162, 0°	Klason. Ber. 20, 3415.
" "	"	1.2059, 10°	
" "	"	1.199, 17°	
Ethyl mercaptan	$C_2 H_5 S H$	.842, 15°	Zeise. P. A. 31, 389.
" "	"	.835, 21°	Liebig. A. C. P. 11, 15.
" "	"	.8456, 5°—10°	Regnault. P. A. 53, 60.
" "	"	.8406, 10°—15°	
" "	"	.8356, 15°—20°	
" "	"	.83907, 20°	Nasini. Ber. 15, 2882.
Butyl mercaptan	$C_4 H_9 S H$	.858, 0°	{ Grabowsky and Saytzeff. A. C. P. 175, 351.
" "	"	.843, 16°	
Isobutyl mercaptan	"	.848, 11°·5	Humann. J. 8, 613.
" "	"	.8299, 17°	Reymann. J. C. S. (2), 13, 141.
" "	"	.83573, 20°	Nasini. Ber. 15, 2882.
Amyl mercaptan	$C_5 H_{11} S H$	.835, 21°	Krutzsch. J. P. C. 31, 2.
" "	"	.8518, 0°	Kopp. A. C. P. 95, 307.
" "	"	.8405, 16°·9	
" "	"	.83475, 20°	Nasini. Ber. 15, 2883.
Hexyl mercaptan	$C_6 H_{13} S H$	.8856, 0°	Wanklyn and Erlenmeyer. J. 17, 509.
Carbon tetramercaptide	$C (S C_2 H_5)_4$	1.01	Claesson. J. 1877, 520.
Ethylene mercaptan	$C_2 H_4 (S H)_2$	1.123, 23°·5	Werner. J. 15, 424.
Methylene dithioethylate	$C H_2 (S C_2 H_5)_2$	.987, 20°	Claesson. J. P. C. 123, 176.
Ethylene dithioethylate	$C_2 H_4 (S C_2 H_5)_2$	.98705, 15°·5	V. Meyer. Ber. 19, 3296.
Ethylene thiovinylethy-	$C_2 H_4 S C_2 H_5 S C_2 H_5$	1.01921, 15°·5	{ " "
Idio.	"	1.0167, 19°—20°	
Derivative of dithioglycol	$C_3 H_{10} S_2$	1.037, 22°	Mansfield. Ber. 19, 2662.
Amylene sulphide	$C_5 H_{10} S$	.907, 13°	Guthrie. J. 14, 665.
Vinyl sulphide	$C_2 H_3 S$	1.015, 13°	Schmoller. A. C. P. 241, 93.
Allyl sulphide	$C_3 H_5 S$	.8541, 11°	Gladstone. Bei. 9, 249.
" "	"	.88765, 4°	Nasini and Scala. Bei. 10, 696.
Allyl trisulphide	$C_6 H_{10} S_3$	1.012, 15°	Lowig. J. 13, 399.
Fenyl sulphide	$C_6 H_5 S$	.880, 13°	Guthrie. J. 12, 484.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Trisulphhydrin-----	$C_3 H_8 S_3$ -----	1.391, 14°.4---	Carius. J. 15, 455.
Methyl trisulphocarbonate	$C_3 H_6 S_3$ -----	1.159, 18° ----	Cahours. Ann. (3), 19, 162.
Ethyl trisulphocarbonate	$C_5 H_{10} S_3$ -----	1.152 -----	Solomon. J. P. C. (2), 6, 433.
Amyl trisulphocarbonate	$C_{11} H_{22} S_3$ -----	.877 -----	Hüsemann. J. 15, 410.
Ethylene trisulphocarbon- ate.	$C_3 H_4 S_3$ -----	1.4768 -----	Hüsemann. A. C. P. 123, 87
Propylene trisulphocar- bonate.	$C_4 H_6 S_3$ -----	1.31, 20° ----	Hüsemann. J. 15, 434.
Butylene trisulphocarbon- ate.	$C_5 H_8 S_3$ -----	1.26, 20° ----	" "
Amylene trisulphocarbon- ate.	$C_6 H_{10} S_3$ -----	1.073 -----	" "
Allyl trisulphocarbonate	$C_7 H_{10} S_3$ -----	.943 -----	Hüsemann. J. 15, 410.
Phenyl sulphide-----	$(C_6 H_5)_2 S$ -----	1.119 -----	Stenhouse. J. 18, 532.
Phenyl tetrasulphide ----	$(C_6 H_5)_2 S_4$ -----	1.297, 14°.5---	Otto. J. P. C. (2), 37, 209.
Phenyl ethyl sulphide ---	$(C_6 H_5) (C_2 H_5) S$ ---	1.0315, 10° ---	Beckmann. J. C. S. 36, 37.
Ethyl paratolyl sulphide	$(C_7 H_7) (C_2 H_5) S$ ---	1.0016, 17°.5---	Gäbler. Ber. 13, 1277.
Phenyl mercaptan -----	$C_6 H_5 \cdot S H$ -----	1.078, 14° ----	Vogt. J. 14, 630.
Benzyl mercaptan -----	$C_7 H_7 \cdot S H$ -----	1.053, 20° ----	Märcker. J. 18, 543.
Xylyl mercaptan -----	$C_8 H_9 \cdot S H$ -----	1.036, 13° ----	Schepper. J. 18, 558.
Mesitylene mercaptan -----	$C_9 H_{11} \cdot S H$ -----	1.0192 -----	Holtmeyer. J. 20, 708.
Cymyl mercaptan -----	$C_{10} H_{13} \cdot S H$ -----	.9975, 17°.5---	Flesch. C. C. 4, 519.
" " -----	" -----	.989 -----	Fittica. A. C. P. 172, 326.
" " -----	" -----	.995 -----	Bechler. Leipzig In- aug. Diss. 1873.
Methylecymyl mercaptan	$C_{11} H_{15} \cdot S H$ -----	.986 -----	" "
Naphthyl mercaptan -----	$C_{10} H_7 \cdot S H$ -----	1.146, 23° ----	Schertel. J. 17, 533.
Thiophene-----	$C_4 H_4 S$ -----	1.062, 23° ----	V. Meyer. Ber. 16, 1471.
" -----	" -----	1.08844, 0° -----	} Schiff. Ber. 18, 1605.
" -----	" -----	1.0769, 10° -----	
" -----	" -----	1.0651, 20° -----	
" -----	" -----	1.0533, 30° -----	
" -----	" -----	1.0413, 40° -----	
" -----	" -----	1.0291, 50° -----	
" -----	" -----	1.0169, 60° -----	
" -----	" -----	1.0045, 70° -----	
" -----	" -----	.9920, 80° -----	
" -----	" -----	.98741, 84° -----	
" -----	" -----	1.05928, 4° -----	Nasini and Scala. Bei. 10, 696.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Thiophene	$C_4H_4S$	1.07387, 11°.8	Knops. V. H. V. 1887, 17.
"	"	1.06835, 16°.5	
"	"	1.06466, 19°.7	
"	"	1.06432, 20°	
"	"	1.06045, 23°.4	
"	"	1.05662, 26°.6	
"	"	1.05332, 29°.2	Meyer and Kreis. Ber. 17, 788.
"	"	1.0534, 32°	
Thiitolene	$C_5H_6S$	1.0194, 18°	Demuth. Ber. 19, 1858.
Orthothioxene	$C_6H_8S$	.9777, 21°	Grünwald. Ber. 20, 2586.
"	"	.9938, 21°	Messinger. Ber. 18, 1637.
Metathioxene	"	.9755, 17°.5	Zelinsky. Ber. 20, 2017.
"	"	.9956, 20°	Meyer and Kreis. Ber. 17, 1558.
Ethylthiophene	"	.990, 24°	" "
Normal propylthiophene	$C_7H_{10}S$	.974, 16°	Schleicher. Ber. 19, 673.
Isopropylthiophene	"	.9695, 16°	Meyer and Kreis. Ber. 17, 1558.
Normal butylthiophene	$C_8H_{12}S$	.957, 19°	Muhlert. Ber. 19, 634.
Diethylthiophene	"	.962, 14°	Schweinitz. Ber. 19, 644.
Octylthiophene	$C_{12}H_{20}S$	.8418, 20°.5	Krekeler. Ber. 19, 3271.
$\beta$ Methylpenthiophene	$C_6H_8S$	.9938, 19°	

## 2d. Compounds Containing C, H, S, and O.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Methyl sulphite	$(CH_3)_2SO_3$	1.0456, 16°.2	Carius. J. 12, 86.
Methyl ethyl sulphite	$(CH_3)(C_2H_5)SO_3$	1.0675, 18°	Carius. A. C. P. 111, 103.
Ethyl sulphite	$(C_2H_5)_2SO_3$	1.085, 16°	Elchmen and Bour- quet. Ann. (3), 17, 67.
" "	"	1.10634, 0°	Pierre. C. R. 27, 213.
" "	"	1.1063, 0°	Carius. J. P. C. (2), 2, 285.
" "	"	1.0926, 12°.7	Nasini. Bol. 9, 324.
" "	"	1.0982, 11°	Dumas and Peligot. Ann. (2), 58, 33.
Methyl sulphate	$(CH_3)_2SO_4$	1.321, 22°	Bodeker. B. D. Z. Clavesson. J. P. C. (2), 19, 244
" "	"	1.385, 13°	Perkin. J. C. S. 19, 777.
" "	"	1.327, 18°	
" "	"	1.33344, 15°	
" "	"	1.32757, 20°	
" "	"	1.32386, 25°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl sulphate -----	$(C_2 H_5)_2 S O_4$ -----	1.120 -----	Wetherill. J. 1, 692.
" " -----	" -----	1.1837, 19° -----	Claesson. J. P. C.
" " -----	" -----	1.167 -----	(2), 19, 258.
Ethyl sulphurous acid ---	$C_2 H_5. H. S O_3$ -----	1.3 -----	Stempnevsky. Ber.
Ethyl sulphuric acid -----	$C_2 H_5. H. S O_4$ -----	1.319 -----	15, 947.
" " " -----	" -----	1.315 } 16° {	Kopp. A. C. P. 35,
" " " -----	" -----	1.317 } -----	343.
" " " -----	" -----	1.215 -----	Vogel. Gmelin's
Ethyl ethylsulphonate ---	$C_4 H_{10} S O_3$ -----	1.1712, 0° -----	Handbuch.
" " -----	" -----	1.1508, 20°.4 } -----	Marchand. Gme-
" " -----	" -----	1.14517, 22° -----	lin's Handbuch.
Isoamyl ethyl sulphone ---	$C_7 H_{16} S O_2$ -----	1.0315, 18° -----	Duflos. Gmelin's
Diisobutyl sulphone -----	$C_8 H_{18} S O_2$ -----	1.0056, 18° -----	Handbuch.
Methyl methylxanthate ---	$C H_3 O. C S. C H_3 S$ -----	1.143, 15° -----	Carius. J. P. C. (2),
" " -----	" -----	1.176, 18° -----	2, 269.
Ethyl methylxanthate ---	$C H_3 O. C S. C_2 H_5 S$ -----	1.12, 18° -----	Nasini. Ber. 15,
" " -----	" -----	1.123, 11° -----	2884.
Methyl ethylxanthate -----	$C_2 H_5 O. C S. C H_3 S$ -----	1.129, 18° -----	Beekmann. J. C. S.
" " -----	" -----	1.11892, 4° -----	36, 38.
Ethyl ethylxanthate -----	$C_2 H_5 O. C S. C_2 H_5 S$ -----	1.0703, 18° -----	" "
" " -----	" -----	1.07 -----	Cahours. Ann. (3),
" " -----	" -----	1.085, 19° -----	19, 160.
Methyl propylxanthate ---	$C_3 H_7 O. C S. C H_3 S$ -----	1.08409, 4° -----	Salomon. J. P. C.
Ethyl propylxanthate -----	$C_3 H_7 O. C S. C_2 H_5 S$ -----	1.05054, 4° -----	(2), 8, 114.
Ethyl butylxanthate -----	$C_4 H_9 O. C S. C_2 H_5 S$ -----	1.003, 17° -----	" "
Butyl butylxanthate -----	$C_4 H_9 O. C S. C_4 H_9 S$ -----	1.009, 12° -----	Chancel. J. 3, 470.
Ethyl dithioxy carbonate ---	$C_2 H_5 S. C O. C_2 H_5 S$ -----	1.084, 20° -----	Salomon. J. P. C.
" " -----	" -----	1.085, 19° -----	(2), 8, 114.
Ethyl thioxy carbonate ---	$C_2 H_5 O. C O. C_2 H_5 S$ -----	1.0285, 18° -----	Nasini and Scala.
Ethyl dioxythio carbonate ---	$C_2 H_5 O. C S. C_2 H_5 O$ -----	1.032, 1° -----	Bei. 10, 696.
" " -----	" -----	1.031, 19° -----	" "
Ethyl butylthioxy carbon-	$C_2 H_5 S. C O. C_4 H_9 O$ -----	.9939, 10° -----	Mylius. B. S. C. 19,
ate. " " -----	$C_2 H_5 O. C O. C_4 H_9 S$ -----	.9938, 10° -----	221.
Ethyl dioxy sulphocarbon-	$C_6 H_{10} S_4 O_2$ -----	1.26043, 4° -----	" "
ate. ?	" -----	1.19661, 4° -----	Debus. J. 3, 465.
Propyl dioxy sulphocarbon-	$C_8 H_{14} S_4 O_2$ -----	1.19661, 4° -----	Salomon. J. P. C.
ate. ?	" -----	1.19661, 4° -----	(2), 6, 433.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Xanthurin	$C_4 H_8 S O_2$	1.012	Conerhe. A. C. P. 40, 297.
Thiactic acid	$C_2 H_4 S O$	1.074, 10°	Ulrich. J. 12, 355.
Ethyl ethylthioglycollate	$C_6 H_{12} S O_2$	1.0469, 4°	Claesson. B. S. C. 23, 445.
Ethyl amylthioglycollate	$C_9 H_{18} S O_2$	.9797, 4°	Claesson. B. S. C. 23, 446.
Ethyl phenylthioglycollate.	$C_{10} H_{12} S O_2$	1.136, 4°	} Claesson. B. S. C. 23, 443.
Disulphamylene oxide	$C_{10} H_{20} S_2 O$	1.1269, 15°	
Disulphamylene hydrate	$C_{10} H_{22} S_2 O_2$	1.054, 13°	Guthrie. J. 12, 483.
Aldehyde with sulphaldehyde.*	$C_2 H_4 O + C_2 H_4 S$	1.049, 8°	" "
Dihexylene sulphoxide	$(C_6 H_{12})_2 S O$	1.134	Weidenbusch. J. 1, 550.
Monosulphhydrin	$C_3 H_8 S O_2$	.875, 23°	Schiff. J. 21, 724.
Disulphhydrin	$C_3 H_8 S_2 O$	1.295, 14°·4	Carius. J. 15, 453.
Ethyl thiooxalate	$C_6 H_{10} S O_3$	1.342, 14°·4	Carius. J. 15, 454.
Oxysulphobenzid	$C_{12} H_{10} S O_4$	1.446, 0°	Morley and Saint. J. C. S. 43, 400.
Oxyphenyl mercaptan	$C_6 H_6 S O$	1.3663, 15°	Annheim. Ber. 9, 1149.
" "	"	1.2373, 0°	} Haitinger. M. C. 4, 171.
" "	"	1.1889, 100°	
Thiophene aldehyde	$C_5 H_4 S O$	1.215, 21°	Biedermann. Ber. 19, 1853.
Acetothienone	$C_6 H_6 S O$	1.167, 24°	Peter. Ber. 17, 2644.
Acetoethylthienone	$C_8 H_{10} S O$	1.0359, 20°	Schleicher. Ber. 19, 660.
Acetylthioxene	"	1.0910, 17°	Messinger. Ber. 18, 2302.

## 3d. Sulphur Compounds Containing Nitrogen.

NAME.	FORMULA.	SPEC. GRAVITY.	AUTHORITY.
Methyl thiocyanate	$N C S C H_3$	1.115, 16°	Cahours. Ann. (3), 18, 261.
" "	"	1.08794, 0°	Pierre. C. R. 27, 213.
" "	"	1.06935, 4°	Nasini and Scala. Bei. 10, 696.
Ethyl thiocyanate	$N C S C_2 H_5$	1.020, 16°	Cahours. Ann. (3), 18, 265.
" "	"	1.0100	Lowig. P. A. 67, 101.
" "	"	1.033, 0°	} Buff. Ber. 1, 206.
" "	"	1.01261, 19°	
" "	"	1.00238, 22°	
" "	"	.870135	
" "	"	.869367	
" "	"	1.00715, 4°	Nasini and Scala. Bei. 10, 696.

\*Pinner's formula  $C_{12} H_{16} S_2 O_7$ . Weidenbusch calls it "sulphhydrate of acetyl mercaptan," and writes the formula  $C_{12} H_{16} S_2 O_7$ .

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Isopropyl thiocyanate----	$\text{N C. S C}_3 \text{H}_7$ -----	.989, 0° } ----	Gerlich. Ber. 8, 651.
“ “ -----	“ -----	.974, 15° } ----	L. Henry. J. 22,
“ “ -----	“ -----	.963, 20° -----	361.
Amyl thiocyanate -----	$\text{N C. S C}_5 \text{H}_{11}$ -----	.905, 20° -----	O. Henry. J. 1, 700.
Hexyl thiocyanate -----	$\text{N C. S C}_6 \text{H}_{13}$ -----	.922, 12° -----	Pelouze and Ca-
Allyl thiocyanate -----	$\text{N C. S C}_3 \text{H}_5$ -----	1.071, 0° } ----	hours. J. 16, 526.
“ “ -----	“ -----	1.056, 15° } ----	Gerlich. Ber. 8, 653.
Methyl thiocarbimide-----	$\text{C S. N C H}_3$ -----	1.06912, 4° -----	Nasini and Scala.
Ethyl thiocarbimide -----	$\text{C S. N C}_2 \text{H}_5$ -----	1.01925, 0° -----	Bei. 10, 696.
“ “ -----	“ -----	.997525, 21°.4 } ----	Buff. Ber. 1, 206.
“ “ -----	“ -----	.997235, 22° -----	
“ “ -----	“ -----	.87909 } 133°.2 } ----	
“ “ -----	“ -----	.873513 } -----	
“ “ -----	“ -----	1.0030, 18° -----	Gladstone. Bei. 9,
“ “ -----	“ -----	.99525, 4° -----	249.
Tertiary butyl thiocarbi-	$\text{C S. N C}_4 \text{H}_9$ -----	.9187, 15° -----	Nasini and Scala.
mide. “ “ -----	“ -----	.9003, 34° -----	Bei. 10, 696.
Amyl thiocarbimide -----	$\text{C S. N C}_5 \text{H}_{11}$ -----	.957538, 0° -----	Rudneff. Ber. 12,
“ “ -----	“ -----	.94189, 17° -----	1023.
“ “ -----	“ -----	.78749, 182° } ----	Buff. Ber. 1, 206.
Hexyl thiocarbimide-----	$\text{C S. N C}_6 \text{H}_{13}$ -----	.9253 -----	
Allyl thiocarbimide-----	$\text{C S. N C}_3 \text{H}_5$ -----	1.015, 20° -----	Uppenkamp. Ber. 8,
“ “ -----	“ -----	1.009 } 15° -----	56.
“ “ -----	“ -----	1.010 } -----	Dumas and Pelouze.
“ “ -----	“ -----	1.0282, 0° -----	Ann. (2), 53, 182.
“ “ -----	“ -----	1.0173, 10°.1 } ----	Will. A. C. P. 52, 4.
“ “ -----	“ -----	.8739 } 150°.1 } ----	Kopp. A. C. P. 98,
“ “ -----	“ -----	.8741 } -----	367.
“ “ -----	“ -----	.8740, 151°.3-----	Schiff. Ber. 14, 2767.
“ “ -----	“ -----	1.00572, 4° -----	Schiff. Ber. 19, 560.
Phenyl thiocarbimide----	$\text{C S. N C}_6 \text{H}_5$ -----	1.135, 15°.5-----	Nasini and Scala.
“ “ -----	“ -----	1.155, 17°.5-----	Bei. 10, 696.
“ “ -----	“ -----	.9398, 219°.8-----	Hofmann. J. 11,
“ “ -----	“ -----	1.12891, 4° -----	349.
“ “ -----	“ -----	1.35 -----	Billeter. C. C. (3),
Sulpho-urea-----	$\text{C H}_4 \text{N}_2 \text{S}$ -----	1.406, 4° -----	6, 101.
“ -----	“ -----	1.450 -----	Schiff. Bei. 9, 559.
Thialdin-----	$\text{C}_6 \text{H}_{13} \text{N S}_2$ -----	1.191, 18° -----	Nasini and Scala.
Oenanthothialdin-----	$\text{C}_{21} \text{H}_{43} \text{N S}_2$ -----	.896, 24° -----	Bei. 10, 696.
Diamylene dithiocyanate-	$\text{C}_{10} \text{H}_{20} (\text{C N})_2 \text{S}_2$ -----	1.07, 13° -----	Madan. C. N. 56,
Diamylene tetrathiocya-	$\text{C}_{10} \text{H}_{20} (\text{C N})_2 \text{S}_4$ -----	1.16, 13° -----	257.
nate.			Schröder. Ber. 12,
			561.
			Schröder. Ber. 13,
			1070.
			Wöhler and Liebig.
			A. C. P. 61, 4.
			Schiff. J. 21, 724.
			Guthrie. J. 14, 665.
			“ “

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sulphocarbamide	$C_{13}H_{12}N_2S$	1.311	Schröder. Ber. 12, 1611.
"	"	1.320	
Thiocyanacetone	$C_4H_5SNO$	1.209, 0°	
"	"	1.195, 20°	Tcherniak and Hel- lon. Ber. 16, 350.
Acetyl thiocyanate	$NCSC_2H_5O$	1.151, 16°	
Benzoyl thiocyanate	$NCSC_7H_5O$	1.197, 16°	Miquel. C. R. 81, 1209.
Ethyl thiocyanacetate	$C_5H_7NSO_2$	1.174	Miquel. C. R. 81, 1210.
"	"	1.174	Heintz. J. 18, 347.
Cystic oxide	$C_3H_7NSO_2$	1.7143	Clæsson. Ber. 10, 1349.
			Venables. Watts' Dict.

## 4th. Sulphur Compounds Containing Halogens.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tetrachlor-methyl mercaptan.	$CSCl_4$	1.712, 12°-8	Rathke. A. C. P. 167, 198.
"	"	1.722, 0°	
"	"	1.7049, 11°	
"	"	1.6953, 17°.5	
Dichlorethyl sulphide	$(C_2H_5Cl)_2S$	1.547, 12°	Klason. Ber. 20, 2378.
Tetrachlorethyl sulphide	$(C_2H_4Cl)_2S$	1.673, 24°	Riche. J. 7, 556.
Ethylchlorperthiocarbon-ate.	$C_2H_5S_2Cl_2$	1.673, 24°	Regnault. Ann. (2), 71, 406.
Ethylene thiodichloride	$C_2H_4S_2Cl_2$	1.1408, 16°	Klason. Ber. 20, 2385.
Ethylene dithiodichloride	$(C_2H_4)_2S_2Cl_2$	1.408, 13°	Guthrie. J. 12, 482.
Chlorethylene dithiodichloride.	$(C_2H_3Cl)_2S_2Cl_2$	1.346, 19°	Guthrie. J. 13, 435.
Dichlorethylene thiodichloride.	$(C_2H_2Cl)_2S_2Cl_2$	1.599, 11°	Guthrie. J. 13, 433.
"	"	1.225	Guthrie. J. 13, 434.
"	"	1.219	
Amylene thiodichloride	$C_5H_{10}S_2Cl_2$	1.138, 14°	Guthrie. J. 12, 481.
Amylene dithiodichloride	$(C_5H_{10})_2S_2Cl_2$	1.149, 12°	Guthrie. J. 12, 480.
Trichloramylene thiodichloride.	$(C_3H_7Cl)_2S_2Cl_2$	1.406, 16°	Guthrie. J. C. S. 13, 44.
Methylsulphonic chloride	$CH_3ClSO_2$	1.51	McGowan. J. P. C. (2), 30, 280.
Dichlormethylsulphonic chloride.	$CHCl_2SO_2$	1.71	McGowan. Leipzig In. Diss. 1884.
Ethylsulphonic chloride	$C_2H_5ClSO_2$	1.357, 22°.5	Gerhardt and Chan- cel. J. 5, 435.
Phenylsulphonic chloride	$C_6H_5ClSO_2$	1.378, 23°	Gerhardt and Chan- cel. J. 5, 434.
Trichlormethyl amyl sul- phite.	$CCl_3C_5H_{11}SO_3$	1.104	Carius. A. C. P. 113, 36.
Ethyl chlorosulphonate.	$C_2H_5O_2SO_2Cl$	1.379, 0°	Purgold. J. 21, 416.
"	"	1.3556, 27°	
"	"	1.324, 61°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl chlorosulphonate	$C_2 H_5 O. S O_2. Cl$	1.3866, 0°	} Two preparations. Claesson. J. P. C. (2), 21, 377.
" "	"	1.3539, 27°	
" "	"	1.3874, 0°	
" "	"	1.3541, 27°	
Carbonyl thioethyl chloride.	$C_2 H_5 S. C O. Cl$	1.184, 16°	Salomon. J. P. C. (2), 7, 254.
Carbonyl thioamyl chloride.	$C_5 H_{11} S. C O. Cl$	1.078, 17°.5	Schöne. J. P. C. (2), 32, 241.
Chlorallyl thiocarbimide	$C S. N C_3 H_4 Cl$	1.27, 12°	L. Henry. Ber. 5, 186.
Ethylene chlorothiocyanate.	$C_2 H_4. Cl. S C N$	1.28, 15°	James. J. C. S. 43, 38.
Tetrachloroxysulphobenzid.	$C_{12} H_6 Cl_4 S O_4$	1.7774, 16°	Annaheim. Ber. 9, 1150.
Tetrabromoxysulphobenzid.	$C_{12} H_6 Br_4 S O_4$	2.3775, 17°	" "
Tetridoxysulphobenzid	$C_{12} H_6 I_4 S O_4$	2.7966, 19°	" "
Monobromthiophene	$C_4 H_3 Br S$	1.652, 23°	V. Meyer. Ber. 16, 1470.
Dibromthiophene	$C_4 H_2 Br_2 S$	2.147, 23°	" "
Octyl iodthiophene	$C_8 H_{17} S. I$	1.2614, 20°	Schweinitz. Ber. 19, 644.

## LXIII. ORGANIC COMPOUNDS OF BORON.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Boron triethyl	$B (C_2 H_5)_3$	.6961, 23°	Frankland and Duppa. J. 13, 386.
Trimethyl borate	$(C H_3)_3 B O_3$	.9551, 0°	Ebelmen and Bouquet. J. P. C. 38, 218.
" "	"	.940, 0°	} Schiff. A. C. P., 5th Supp., 184.
" "	"	.915, 20°	
Triethyl borate	$(C_2 H_5)_3 B O_3$	.8849	Ebelmen and Bouquet. J. P. C. 38, 215.
" "	"	.871	Bowman. P. M. (3), 29, 548.
" "	"	.887, 0°	} Schiff. A. C. P., 5th Supp., 161.
" "	"	.861, 26°.5	
Methyl diethyl borate	$C H_3 (C_2 H_5)_2 B O_3$	.904, 0°	} Schiff. A. C. P., 5th Supp., 197.
" " "	"	.883, 20°	
Tripropyl borate	$(C_3 H_7)_3 B O_3$	.867, 16°	Cahours. C. C. 4, 482.
Triamyl borate	$(C_5 H_{11})_3 B O_3$	.870	Ebelmen and Bouquet. J. P. C., 38, 219.
" "	"	.872, 0°	} Schiff. A. C. P., 5th Supp., 189 and 195.
" "	"	.852, 24°	
" "	"	.840	
" "	"	.855	
" "	"	.853, 29, another lot.	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl diamyl borate -----	$C_2 H_5 (C_5 H_{11})_2 B O_3$ -----	.876, 0° -----	Schiff. A. C. P., 5th Supp., 193.
" " -----	" " -----	.852, 28° -----	
Diethyl amyl borate -----	$(C_2 H_5)_2 C_5 H_{11} B O_3$ -----	.858, 26° -----	Schiff. A. C. P., 5th Supp., 189.
Amyl metaborate -----	$C_5 H_{11} B O_2$ -----	.971, 0° -----	
" " -----	" " -----	.949, 20° -----	Schiff and Beechi. J. 19, 493.
Tetraphenyl borate -----	$(C_6 H_5)_4 B_2 O_5$ -----	1.13 -----	
" " -----	" " -----	1.124, 0° -----	Schiff. A. C. P., 5th Supp., 208.
" " -----	" " -----	1.106, 20° -----	
Ethylene fluoroborate -----	$C_2 H_5 B F O_2$ -----	1.0478, 23° -----	Landolph. Ber. 12, 1586.

## LXIV. ORGANIC COMPOUNDS OF PHOSPHORUS.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Triethylphosphin -----	$P (C_2 H_5)_3$ -----	.812, 15°.5 -----	Hofmann and Ca- hours. J. 10, 372.
Monoethylphosphin -----	$P H_2 (C_2 H_5)$ -----	.8209, 17° -----	Möslinger. Ber. 9, 1007.
Phenylphosphin -----	$P H_2 (C_6 H_5)$ -----	1.001, 15° -----	Köhler and Michael- is. Ber. 10, 809.
Diphenylphosphin -----	$P H (C_6 H_5)_2$ -----	1.07, 16° -----	Dörken. Ber. 21, 1508.
Triphenylphosphin -----	$P (C_6 H_5)_3$ -----	1.194 -----	Michaelis and So- den. A. C. P. 229, 302.
" " -----	" " -----	1.186 -----	Soden. Tübingen In. Diss. 1885.
Dimethylphenylphosphin	$P (C H_3)_2 C_6 H_5$ -----	.9768, 11° -----	Michaelis. Ber. 8, 498.
Diphenylmethylphosphin	$P C H_3 (C_6 H_5)_2$ -----	1.0784, 15° -----	Michaelis and Link. A. C. P. 207, 209.
Diethylphenylphosphin --	$P (C_2 H_5)_2 C_6 H_5$ -----	.9571, 13° -----	Michaelis. Ber. 8, 494.
Ethyl phosphite -----	$(C_2 H_5)_3 P O_3$ -----	1.075 -----	Williamson. J. 7, 563.
Methyl hypophosphate --	$(C H_3)_4 P_2 O_6$ -----	1.109, 15° -----	Sanger. A. C. P. 232, 1.
Ethyl hypophosphate ----	$(C_2 H_5)_4 P_2 O_6$ -----	1.1170, 15° -----	" "
Propyl hypophosphate ----	$(C_3 H_7)_4 P_2 O_6$ -----	1.134, 15° -----	" "
Isobutyl hypophosphate --	$(C_4 H_9)_4 P_2 O_6$ -----	1.125, 15° -----	" "
Methyl orthophosphate --	$(C H_3)_3 P O_4$ -----	1.2378, 0° -----	} Weger. A. C. P. 221, 61.
" " -----	" " -----	1.0019, 197°.2 -----	
Dimethyl ethyl orthophos- phate. " " -----	$(C H_3)_2 C_2 H_5 P O_4$ -----	1.1752, 0° -----	} " "
" " -----	" " -----	.95188, 203°.3 -----	
Ethyl orthophosphate. --	$(C_2 H_5)_3 P O_4$ -----	1.072, 12° -----	Limpricht. J. 18, 471.
Ethyl pyrophosphate ----	$(C_2 H_5)_4 P_2 O_7$ -----	1.172, 17° -----	Clermont. J. 7, 562.
Amyl amylphosphate ----	$(C_5 H_{11})_2 H P O_3$ -----	.967, 19°.5 -----	Wurtz. A. C. P. 58, 77.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Diamylphosphoric acid---	$(C_5 H_{11})_2 H P O_4$ ---	1.025, 20° ----	Fehling.
Triphenyl phosphite-----	$(C_6 H_5)_3 P O_3$ -----	1.184, 18° ----	Noack. A. C. P. 218, 99.
Phosphenyl ether -----	$C_6 H_5 P O_2 (C_2 H_5)_2$ ---	1.032, 16° ----	Köhler and Michaelis. Ber. 10, 817.
Phenylphosphinic acid --	$C_6 H_5 \cdot H_2 P O_3$ -----	1.475, 4° -----	Schröder. Ber. 12, 561.
Diphenylphosphinic acid--	$(C_6 H_5)_2 H P O_2$ -----	1.331 } 4° ----	" " "
" " " " " " " " " " " "	" " " " " " " " " " " "	1.347 } " " "	" " "
Phenoxyldiphenyl phosphin.	$C_6 H_5 O (C_6 H_5)_2 P$ ---	1.140, 24° ----	Michaelis and La Coste. Ber. 18, 2111.
Triphenylphosphin oxide.	$(C_6 H_5)_3 P O$ -----	1.2124, 22°.6--	Michaelis and La Coste. Ber. 18, 2120.
Naphtylphosphinic acid---	$C_{10} H_7 \cdot H_2 P O_3$ -----	1.435 } 4° -- {	Schröder. Ber. 12, 561.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.445 } " " "	" " "
Naphtylphosphorous acid	$C_{10} H_7 \cdot H_2 P O_2$ -----	1.377, 4° -----	" " "
" " " " " " " " " " " "	" " " " " " " " " " " "	1.441, 4°, after fusion.	" " "
Complex ether? -----	$C_{14} H_{36} P_2 O_3$ -----	.960, 14° -----	Geuther. A. C. P. 224, 278.
Amylnitrophosphorous acid.	$(C_5 H_{11})_2 H P N O_4$ ---	1.02, 20° } 1.00, 70° }	Guthrie. J. 11, 404.
Ethylphosphorous chloride	$C_2 H_5 P O Cl_2$ -----	1.316, 0° -----	Menschutkin. A. C. P. 139, 344.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.305265, 0° -----	} Thorpe. J. C. S. 37, 372.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.13989, 117°.5	" " "
Butylphosphorous chloride.	$C_4 H_9 P O Cl_2$ -----	1.191, 0° -----	Menschutkin. J. 19, 487.
Amylphosphorous chloride.	$C_5 H_{11} P O Cl_2$ -----	1.109, 0° -----	" " "
Diacetone phosphorous chloride.	$C_6 H_{10} P O_2 Cl$ -----	1.209, 17°.5--	Michaelis. Ber. 18, 900.
Phenylphosphorous chloride.	$C_6 H_5 P O Cl_2$ -----	1.3549 -----	Hölzer. Quoted by Noack.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.348, 18° ----	Noack. A. C. P. 218, 91.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.3543, 20° ----	Anschütz and Emery. A. C. P. 239, 310.
Diphenylphosphorous chloride.	$(C_6 H_5)_2 P O_2 Cl$ ---	1.2494 -----	Hölzer. Quoted by Noack.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.221, 18° ----	Noack. A. C. P. 218, 92.
Phosphenyl chloride-----	$C_6 H_5 P Cl_2$ -----	1.319, 20° ----	Michaelis. C. C. 4, 548.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.3428, 0° -----	} Thorpe. J. C. S. 37, 372.
" " " " " " " " " " " "	" " " " " " " " " " " "	1.10415, 224°.6	" " "
Phosphenyl oxychloride---	$C_6 H_5 P Cl_2 O$ -----	1.375, 20° ----	Michaelis. C. C. 4, 548.
Diphenyl phosphochloride	$(C_6 H_5)_2 P Cl$ -----	1.2293, 15° ---	Michaelis and Link. A. C. P. 207, 209.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Metachlorocarbonylphenylorthophosphoric chloride.	$C_7 H_4 P O_3 Cl_3$ -----	1.54844, 20°	Anschütz and Moore. A. C. P. 239, 335.
Parachlorocarbonylphenylorthophosphoric chloride.	“-----	1.54219, 20°	Anschütz and Moore. A. C. P. 239, 344.
By action of $P Cl_3$ on salicylic acid.	$C_7 H_4 P O_2 Cl_3$ -----	1.62019, 20°	Anschütz and Moore. A. C. P. 239, 320.
Paraxylylphosphochloride.	$C_8 H_9 P Cl_2$ -----	1.25, 18°	Weller. Ber. 21, 1494.
Paraxylylphosphoroxychloride.	$C_8 H_9 P O Cl_2$ -----	1.31, 18°	“ “
Sulphophosphorous ether.	$(C_2 H_5)_3 P S_3$ -----	1.24, 12°	Michaelis. C. N. 25, 57.
Ethyl pyrosulphophosphate.	$(C_2 H_5)_4 P_2 S_3 O_4$ ----	1.1892, 17°	Michaelis. A. C. P. 164, 9.
Amyl sulphophosphate.	$(C_5 H_{11})_3 P S O_3$ -----	.849, 12°	Chevrier. J. 22, 344.
Ethylsulphophosphorous chloride.	$C_2 H_5 P S Cl_2$ -----	1.30, 12°	Michaelis. C. N. 25, 57.
Triethoxypyrophosphorsulphobromide.	$(C_2 H_5)_3 Br P_2 S_3 O_3$	1.3567, 19°	Michaelis. A. C. P. 164, 9.
Phenylsulphochloride.	$C_6 H_5 P Cl_2 S$ -----	1.376, 13°	Köhler and Michaelis. Ber. 9, 1053.
Triphenyltrisulphophosphamide.	$(C_6 H_5)_3 H_3 N_3 P S$ ----	1.31	Chevrier. J. 21, 734.

# LXV. ORGANIC COMPOUNDS OF VANADIUM, ARSENIC, ANTIMONY, AND BISMUTH.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl orthovanadate.	$(C_2 H_5)_3 V O_4$ -----	1.167, 17°.5	Hall. J. C. S. 51, 752.
Dimethylarsine oxide.	$(As C_2 H_5)_2 O$ -----	1.462, 15°	Bunsen. P. A. 40, 224.
Triethylarsine.	$As (C_2 H_5)_3$ -----	1.151, 16°.7	Landolt. J. 6, 492.
Methyl arsenite.	$C H_3)_3 As O_3$ -----	1.428, 9°.6	Crafts. Z. C. 14, 324.
Ethyl arsenite.	$(C_2 H_5)_3 As O_3$ -----	1.224, 0°	Crafts. J. 20, 552.
Amyl arsenite.	$(C_5 H_{11})_3 As O_3$ -----	1.0525, 0°	Crafts.
Methyl arsenate.	$(C H_3)_3 As O_4$ -----	1.5594, 14°.5	Crafts. Z. C. 14, 324.
Ethyl arsenate.	$(C_2 H_5)_3 As O_4$ -----	1.3264, 0°	Crafts. J. 20, 551.
“ “	“-----	1.3161, 8°.8	
Phenylarsenic acid.	$C_6 H_7 As O_3$ -----	1.760	
“ “	“-----	1.803, 4°	Schröder. Ber. 12, 561.
“ “	“-----	1.805	
Diphenylarsenic acid.	$C_{12} H_{11} As O_2$ -----	1.515, 4°	“ “

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Diphenylarsine chloride	As (C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> Cl	1.42231, 15°	La Coste and Michaelis. Ber. 11, 1885.
Phenylarsine bromide	As (C <sub>6</sub> H <sub>5</sub> ) Br <sub>2</sub>	2.0983, 15°	Michaelis. Ber. 10, 626.
Ethyl thioarsenite	As (S C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub>	1.3141, 16°	Claesson. Lund Arskrift, 1884-'5.
Trimethylstibine	Sb (C H <sub>3</sub> ) <sub>3</sub>	1.523, 15°	Landolt. J. 14, 569.
Triethylstibine	Sb (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub>	1.3244, 16°	Löwig and Schweitzer. J. 3, 471.
Triamylstibine	Sb (C <sub>5</sub> H <sub>11</sub> ) <sub>3</sub>	1.1333, 17°	Berlé. J. 8, 586.
Triethylstibine chloride	Sb (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> Cl <sub>2</sub>	1.0587	Cramer. J. 8, 590.
Triethylstibine bromide	Sb (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> Br <sub>2</sub>	1.540, 17°	Löwig and Schweitzer. J. 3, 476.
Triphenylstibine	Sb (C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub>	1.953, 17°	" "
Metatritolylstibine	Sb (C <sub>7</sub> H <sub>7</sub> ) <sub>3</sub>	1.4998, 12°	Michaelis and Reese. A. C. P. 233, 46.
Paratritolylstibine	"	1.3957, 15°.7	Michaelis and Genzken. A. C. P. 242, 185.
		1.35448, 15°.6	Michaelis and Genzken. A. C. P. 242, 169.
Bismuth trimethyl	Bi (C H <sub>3</sub> ) <sub>3</sub>	2.30, 18°	Marquandt. Ber. 20, 1517.
Bismuth triethyl	Bi (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub>	1.82	Breed. J. 5, 602.
Bismuth triphenyl	Bi (C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub>	1.5851, 20°	Michaelis and Polis. Ber. 20, 55.

## LXVI. ORGANIC COMPOUNDS OF SILICON.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silicon tetrethyl	Si (C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub>	.7657, 22°.7	Friedel and Crafts. A. J. S. (2), 49, 311.
" "	"	.8341, 0°	Ladenburg. B. S. C. 18, 240.
Silicon hexethyl	Si <sub>2</sub> (C <sub>2</sub> H <sub>5</sub> ) <sub>6</sub>	.8510, 0°	} { Friedel and Ladenburg. A. C. P. 203, 251.
" "	"	.8403, 20°	
Silicon tetrapropyl	Si (C <sub>3</sub> H <sub>7</sub> ) <sub>4</sub>	.7979, 0°	} { Pape. Ber. 14, 1872.
" "	"	.7883, 15°	
Silicoheptane	Si C <sub>6</sub> H <sub>16</sub>	.7510, 0°	Ladenburg. A. C. P. 164, 300.
Silicododecane	Si C <sub>9</sub> H <sub>22</sub>	.7723, 0°	} { Pape. Ber. 14, 1872.
"	"	.7621, 15°	
Silicon triethyl phenyl	Si (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> C <sub>6</sub> H <sub>5</sub>	.9042, 0°	Ladenburg. C. C. 5, 312.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silicon tetraphenyl .....	$\text{Si} (\text{C}_6 \text{H}_5)_4$ .....	1.078, 20° .....	Polis. Ber. 19, 1012.
Para-silicon tetratolyl .....	$\text{Si} (\text{C}_7 \text{H}_7)_4$ .....	1.0793, 20° .....	" "
Meta-silicon tetratolyl .....	" .....	1.1188, 20° .....	" "
Silicon tetrabenzyl .....	" .....	1.0776, 20° .....	" "
Ethyl metasilicate .....	$(\text{C}_2 \text{H}_5)_2 \text{Si O}_3$ .....	1.079, 21° .....	Ebelmen. A. C. P. 57, 339.
Methyl orthosilicate .....	$(\text{C H}_3)_4 \text{Si O}_4$ .....	1.0589, 0° .....	Friedel and Crafts. J. 18, 465.
Trimethyl ethyl orthosilicate.	$(\text{C H}_3)_3 \text{C}_2 \text{H}_5 \text{Si O}_4$ .....	1.023 .....	Friedel and Crafts. J. 19, 491.
Dimethyl diethyl orthosilicate.	$(\text{C H}_3)_2 (\text{C}_2 \text{H}_5)_2 \text{Si O}_4$ .....	1.004, 0° .....	" "
Methyl triethyl orthosilicate.	$\text{C H}_3 (\text{C}_2 \text{H}_5)_3 \text{Si O}_4$ .....	.989, 0° .....	" "
Ethyl orthosilicate .....	$(\text{C}_2 \text{H}_5)_4 \text{Si O}_4$ .....	.932 .....	Ebelmen. A. C. P. 52, 324.
" " .....	" .....	.933, 20° .....	Ebelmen. A. C. P. 57, 334.
" " .....	" .....	.9676, 0° .....	Friedel and Crafts. A. J. S. (2), 48, 158.
" " .....	" .....	.9330, 22°, 5 .....	Mendeleeff. J. 13, 7.
Propyl orthosilicate .....	$(\text{C}_3 \text{H}_7)_4 \text{Si O}_4$ .....	.915, 18° .....	Cahours. C. C. 4, 482.
Butyl orthosilicate .....	$(\text{C}_4 \text{H}_9)_4 \text{Si O}_4$ .....	.953, 15° .....	Cahours. C. C. 5, 20.
Triethyl amyl orthosilicate .....	$(\text{C}_2 \text{H}_5)_3 \text{C}_5 \text{H}_{11} \text{Si O}_4$ .....	.926, 0° .....	Friedel and Crafts. A. J. S. (2), 43, 163.
Diethyl diamyl orthosilicate.	$(\text{C}_2 \text{H}_5)_2 (\text{C}_5 \text{H}_{11})_2 \text{Si O}_4$ .....	.915, 0° .....	Friedel and Crafts. J. 19, 489.
Ethyl triamyl orthosilicate .....	$\text{C}_2 \text{H}_5 (\text{C}_5 \text{H}_{11})_3 \text{Si O}_4$ .....	.913, 0° .....	" "
Amyl orthosilicate .....	$(\text{C}_5 \text{H}_{11})_4 \text{Si O}_4$ .....	.868, 20° .....	Ebelmen. A. C. P. 57, 341.
Hexamethyl disilicate .....	$(\text{C H}_3)_6 \text{Si}_2 \text{O}_7$ .....	1.144, 0° .....	Friedel and Crafts. J. 18, 465.
Hexethyl disilicate .....	$(\text{C}_2 \text{H}_5)_6 \text{Si}_2 \text{O}_7$ .....	1.0196, 0° .....	Friedel and Crafts. J. 19, 489.
" " .....	" .....	1.0019, 19°, 2 .....	" "
Octethyl tetrasilicate .....	$\text{C}_8 \text{H}_{17} \text{Si}_4 \text{O}_{12}$ .....	1.071, 0° .....	(Troost and Hauteville. B. S. C. 19, 255.
" " .....	" .....	1.054, 14°, 5 .....	" "
Ethyl silicoacetate .....	$\text{C}_7 \text{H}_{18} \text{Si O}_3$ .....	.9283, 0° .....	Ladenburg. J. C. S. (2), 12, 40.
Methyl silicopropionate .....	$\text{C}_7 \text{H}_{14} \text{Si O}_3$ .....	.9747, 0° .....	Ladenburg. A. C. P. 173, 143.
Ethyl silicopropionate .....	$\text{C}_8 \text{H}_{20} \text{Si O}_3$ .....	.9207, 0° .....	Friedel and Ladenburg. A. C. P. 159, 259.
Ethyl silicobenzoate .....	$\text{C}_{12} \text{H}_{20} \text{Si O}_3$ .....	1.0133, 0° .....	Ladenburg. J. C. S. 2, 11, 1026.
" " .....	" .....	1.0055, 10° .....	" "
Silicon diethyl diethylate .....	$\text{C}_8 \text{H}_{20} \text{Si O}_3$ .....	.8752, 0° .....	Ladenburg. A. C. P. 164, 300.
Triethylsilicid .....	$\text{Si C}_6 \text{H}_{13} \text{O H}$ .....	.8709, 0° .....	" "
Silicoheptyl oxide .....	$(\text{Si C}_6 \text{H}_{13})_2 \text{O}$ .....	.8831, 0° .....	Ladenburg. Ber. 4, 730.
" " .....	" .....	.8590, 0° .....	Ladenburg. A. C. P. 164, 300.
Silicoheptyl acetate .....	$\text{Si C}_6 \text{H}_{13} \text{C}_2 \text{H}_3 \text{O}_2$ .....	.9039, 0° .....	" "
Silicoheptyl ethylate .....	$\text{Si C}_6 \text{H}_{13} \text{C}_2 \text{H}_5 \text{O}_2$ .....	.8463, 0° .....	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silicoheptyl chloride-----	Si C <sub>6</sub> H <sub>15</sub> Cl -----	.9249, 0° -----	Ladenburg. A. C. P. 164, 300.
Methylsilicic monochlorhydrin.	Si C <sub>3</sub> H <sub>9</sub> Cl O <sub>3</sub> -----	1.1954, 0° ----	Friedel and Crafts. J. 19, 490.
Methylsilicic dichlorhydrin.	Si C <sub>2</sub> H <sub>6</sub> Cl <sub>2</sub> O <sub>2</sub> -----	1.2595 -----	" "
Ethylsilicic monochlorhydrin.	Si C <sub>6</sub> H <sub>15</sub> Cl O <sub>3</sub> -----	1.0483, 0° ----	Friedel and Crafts. A. J. S. (2), 43, 160.
Ethylsilicicdichlorhydrin	Si C <sub>4</sub> H <sub>10</sub> Cl <sub>2</sub> O <sub>2</sub> -----	1.144, 0° -----	Friedel and Crafts. J. 19, 488.
Ethylsilicic trichlorhydrin	Si C <sub>2</sub> H <sub>5</sub> Cl <sub>3</sub> O -----	1.241, 0° -----	Friedel and Crafts. J. 19, 489.
Propylsilicic monochlorhydrin.	Si C <sub>9</sub> H <sub>21</sub> Cl O <sub>3</sub> -----	.980 -----	Cahours. C. C. 4, 482.
Propylsilicic dichlorhydrin.	Si C <sub>6</sub> H <sub>14</sub> Cl <sub>2</sub> O <sub>2</sub> -----	1.028 -----	" "
Derivative of silicon triethylphenyl.	Si C <sub>12</sub> H <sub>19</sub> Cl -----	1.1085, 0° ----	Ladenburg. A. C. P. 173, 143.
Silicon iodoform-----	Si H I <sub>3</sub> -----	3.362, 0° ----	Friedel. A. C. P. 149, 96.
" " -----	" -----	3.314, 20° -- }	

## LXVII. ORGANIC COMPOUNDS OF TIN.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Stannetramethyl-----	Sn (C H <sub>3</sub> ) <sub>4</sub> -----	1.3138, 0° ----	Ladenburg. Z. C. 13, 605.
Stanndiethyl-----	Sn <sub>2</sub> (C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> -----	1.558, 15° ----	Löwig. J. 5, 584.
"-----	"-----	1.192 -----	Buckton. J. 11, 392.
"Ethylene stannethyl"-----	"-----	1.410 -----	Löwig. J. 5, 585.
Stanntriethyl-----	Sn <sub>2</sub> (C <sub>2</sub> H <sub>5</sub> ) <sub>6</sub> -----	1.4115, 0° ----	Ladenburg. Z. C. 13, 604.
Stanntetrethyl-----	Sn (C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> -----	1.187, 13°.6----	Frankland. J. 12, 411.
Stannethyltrimethyl-----	Sn C <sub>2</sub> H <sub>5</sub> (C H <sub>3</sub> ) <sub>3</sub> ----	1.243 -----	Cahours. J. 14, 551.
Stanndiethyldimethyl-----	Sn (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> (C H <sub>3</sub> ) <sub>2</sub> ----	1.2319, 19° ----	Frankland. J. 12, 412.
"-----	"-----	1.2509, 0° ----	Two lots. Morgu- noff. Z. C. 10, 370.
"-----	"-----	1.2603, 0° ----	
Stanntetrapropyl-----	Sn (C <sub>3</sub> H <sub>7</sub> ) <sub>4</sub> -----	1.179, 14° ----	Cahours. B. S. C. 20, 190.
Stanntriethylphenyl-----	Sn (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> C <sub>6</sub> H <sub>5</sub> ----	1.2639, 0° ----	Ladenburg. A. C. P. 159, 251.
Stanntriethyl ethylate----	Sn (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> C <sub>2</sub> H <sub>5</sub> O.----	1.2634, 0° ----	Ladenburg. A. C. P., 8th Supp., 60.
Stanndimethyl iodide-----	Sn (C H <sub>3</sub> ) <sub>2</sub> I <sub>2</sub> -----	2.872, 22° ----	Cahours. J. 12, 427.
Stanntrimethyl iodide-----	Sn (C H <sub>3</sub> ) <sub>3</sub> I-----	2.155, 18° ----	Cahours. J. 12, 429.
" "-----	"-----	2.1432, 0° ----	Ladenburg. Z. C. 13, 605.
" "-----	"-----	2.1096, 18° ----	
Stanndiethyl iodide-----	Sn (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> I <sub>2</sub> -----	1.8 -----	Cahours. J. 12, 424.
" "-----	"-----	2.0329, 15° ----	Frankland. J. 12, 413.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Stanntriethyl chloride	$\text{Sn} (\text{C}_2 \text{H}_5)_3 \text{Cl}$	1.428, 8°	Cahours. J. 12, 425
" "	"	1.320	Löwig. J. 5, 588.
Stanntriethyl bromide	$\text{Sn} (\text{C}_2 \text{H}_5)_3 \text{Br}$	1.630	" "
Stanntriethyl iodide	$\text{Sn} (\text{C}_2 \text{H}_5)_3 \text{I}$	1.850	" "
" "	"	1.833, 22°	Cahours. J. 12, 424.
Stanntripropyl iodide	$\text{Sn} (\text{C}_3 \text{H}_7)_3 \text{I}$	1.692, 16°	Cahours. B.S.C. 19, 301.
Stanntributyl iodide	$\text{Sn} (\text{C}_4 \text{H}_9)_3 \text{I}$	1.540, 15°	Cahours. C. C. 5, 20.
"Ethstannethyl chloride"	$\text{Sn}_2 \text{C}_{10} \text{H}_{25} \text{Cl}$	1.30	Löwig. J. 5, 588.
"Ethstannethyl bromide"	$\text{Sn}_2 \text{C}_{10} \text{H}_{25} \text{Br}$	1.48	" "
"Ethstannethyl iodide"	$\text{Sn}_2 \text{C}_{10} \text{H}_{25} \text{I}$	1.724	" "

## LXVIII. ORGANIC COMPOUNDS OF ALUMINUM.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Aluminum ethylate	$\text{Al} (\text{C}_2 \text{H}_5 \text{O})_3$	1.147, 4°	Gladstone and Tribe. C. N. 42, 3.
Aluminum propylate	$\text{Al} (\text{C}_3 \text{H}_7 \text{O})_3$	1.026, 4°	" "
Aluminum butylate	$\text{Al} (\text{C}_4 \text{H}_9 \text{O})_3$	.9825, 4°	" "
Aluminum amylate	$\text{Al} (\text{C}_5 \text{H}_{11} \text{O})_3$	.9804, 4°	" "
Aluminum phenylate	$\text{Al} (\text{C}_6 \text{H}_5 \text{O})_3$	1.25, 4°	" "
Aluminum cresylate	$\text{Al} (\text{C}_7 \text{H}_7 \text{O})_3$	1.166, 4°	" "
Aluminum thymolate	$\text{Al} (\text{C}_{10} \text{H}_{13} \text{O})_3$	1.04, 4°	" "
Aluminum chloride and benzene.	$\text{Al Cl}_3, 3 \text{C}_6 \text{H}_6$	1.14, 0°	Gustavson. Ber. 11, 2152.
" "	"	1.12, 20°	
Aluminum chloride and toluene.	$\text{Al Cl}_3, 3 \text{C}_7 \text{H}_8$	1.08, 0°	" "
" "	"	1.06, 22°	
Aluminum chloride and cymene.	$2 \text{Al Cl}_3, 3 \text{C}_{10} \text{H}_{14}$	1.139, 0°	Gustavson. Ber. 12, 694.
" "	"	1.127, 18°	
Aluminum bromide and benzene.	$\text{Al Br}_3, 3 \text{C}_6 \text{H}_6$	1.49, 0°	Gustavson. Ber. 11, 1845.
" "	"	1.47, 20°	
Aluminum bromide and toluene.	$\text{Al Br}_3, 3 \text{C}_7 \text{H}_8$	1.37, 0°	Gustavson. Ber. 11, 1843.
" "	"	1.35, 20°	
Aluminum bromide and cymene.	$2 \text{Al Br}_3, 3 \text{C}_{10} \text{H}_{14}$	1.493, 0°	Gustavson. Ber. 12, 694.
" "	"	1.477, 16°	

## LXIX. ORGANIC COMPOUNDS OF ZINC, MERCURY, THALLIUM, AND LEAD.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Zinc methyl -----	$\text{Zn (C H}_3)_2$ -----	1.386, 10°.5 -----	Frankland and Duppa. J. 16, 473.
Zinc ethyl -----	$\text{Zn (C}_2\text{ H}_5)_2$ -----	1.182, 18° -----	Frankland. J. 8, 577.
Zinc propyl -----	$\text{Zn (C}_3\text{ H}_7)_2$ -----	1.098, 15° -----	Gladstone and Tribe. J. S. C. (2), 11, 968.
Zinc amyl -----	$\text{Zn (C}_5\text{ H}_{11})_2$ -----	1.022, 0° -----	Frankland and Duppa. J. 16, 473.
Mercurmethyl -----	$\text{Hg (C H}_3)_2$ -----	3.069 -----	Buckton. J. 11, 388.
Mercrethyl -----	$\text{Hg (C}_2\text{ H}_5)_2$ -----	2.444 -----	Buckton. J. 11, 390.
Mercurpropyl -----	$\text{Hg (C}_3\text{ H}_7)_2$ -----	2.124, 16° -----	Cahours. B. S. C. 19, 301.
Mercurbutyl -----	$\text{Hg (C}_4\text{ H}_9)_2$ -----	1.7469, 0° -----	{ Chapman and Smith. J. C. S. 22, 164.
“ -----	“ -----	1.7192, 16° -----	
“ -----	“ -----	1.835, 15° -----	Cahours. C. C. 5, 20.
Mercuramyl -----	$\text{Hg (C}_5\text{ H}_{11})_2$ -----	1.6663, 0° -----	Frankland and Duppa.
Mercurioetyl -----	$\text{Hg (C}_8\text{ H}_{17})_2$ -----	1.342, 17° -----	Eichler. Ber. 12, 1880.
Mercurdiphenyl -----	$\text{Hg (C}_6\text{ H}_5)_2$ -----	2.290 -----	{ Schröder. Ber. 12, 561.
“ -----	“ -----	2.324 -----	
“ -----	“ -----	2.340 -----	
Mercurdinaphtyl -----	$\text{Hg (C}_{10}\text{ H}_7)_2$ -----	1.918 -----	{ “ “
“ -----	“ -----	1.926 -----	
“ -----	“ -----	1.944 -----	
Mercurmethyl chloride -----	$\text{Hg C H}_3\text{ Cl}$ -----	4.063, 4° -----	“ “
Mercrethyl chloride -----	$\text{Hg C}_2\text{ H}_5\text{ Cl}$ -----	3.461 -----	{ “ “
“ -----	“ -----	3.503 -----	
Mercury $\beta$ hexyl mercaptide.	$\text{Hg (C}_6\text{ H}_{13}\text{ S)}_2$ -----	1.6502, 0° -----	Wanklyn and Erlenmeyer. J. 17, 510.
Thallium ethylate -----	$\text{Ti C}_2\text{ H}_5\text{ O}$ -----	3.480 -----	{ Lamy. Ann. (4), 3, 373.
“ -----	“ -----	3.685 -----	
Thallium amylate -----	$\text{Ti C}_5\text{ H}_{11}\text{ O}$ -----	2.465 -----	{ Lamy. J. 17, 466
“ -----	“ -----	2.518 -----	
Lead tetramethyl -----	$\text{Pb (C H}_3)_4$ -----	2.034, 0° -----	Butlerow. J. 16, 476.
Lead diethyl -----	$\text{Pb (C}_2\text{ H}_5)_2$ -----	1.55 -----	Buckton. J. 11, 391.
“ -----	“ -----	1.62 -----	Buckton. J. 12, 409.
Lead triethyl -----	$\text{Pb}_2\text{ (C}_2\text{ H}_5)_6$ -----	1.471, 10° -----	Klippel. J. 13, 381.
Lead tetraphenyl -----	$\text{Pb (C}_6\text{ H}_5)_4$ -----	1.5298, 20° -----	Polis. Ber. 20, 716.
Para lead tetratolyl -----	$\text{Pb (C}_7\text{ H}_7)_4$ -----	1.4329, 20° -----	“ “

## LXX. METALLIC SALTS OF ORGANIC ACIDS.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lithium formate	$\text{Li C H O}_2 \cdot \text{H}_2 \text{O}$	1.435	Schröder. Ber. 14, 21.
" "	"	1.479	
Sodium formate	$\text{Na C H O}_2$	1.907	
" "	"	1.931	" "
Potassium formate	$\text{K C H O}_2$	1.896	
" "	"	1.920	
Ammonium formate	$\text{Am C H O}_2$	1.254	" "
" "	"	1.271	
Zinc formate	$\text{Zn C}_2 \text{H}_2 \text{O}_4$	2.368	Schröder. Ber. 14, 23.
" "	$\text{Zn C}_2 \text{H}_2 \text{O}_4 \cdot 2 \text{H}_2 \text{O}$	2.339	Schröder. Ber. 8, 199.
" "	"	2.205	Schröder. Ber. 14, 23.
" "	"	2.1575, 21°.3	Breen. F. W. C.
Cadmium formate	$\text{Cd C}_2 \text{H}_2 \text{O}_4 \cdot 2 \text{H}_2 \text{O}$	2.429, 20°.2	" "
" "	"	2.427	Schröder. Ber. 14, 22.
" "	"	2.477	
Calcium formate	$\text{Ca C}_2 \text{H}_2 \text{O}_4$	2.021	
" "	"	2.009	Schröder. Ber. 14, 22.
" "	"	2.015	
Sroutium formate	$\text{Sr C}_2 \text{H}_2 \text{O}_4$	2.667	" "
" "	$\text{Sr C}_2 \text{H}_2 \text{O}_4 \cdot 2 \text{H}_2 \text{O}$	2.252, cryst.	Schröder. Ber. 8, 199.
" "	"	2.266, pulv.	
" "	"	2.241, m. of 3	
Barium formate	$\text{Ba C}_2 \text{H}_2 \text{O}_4$	3.193, cryst.	Schröder. Ber. 8, 199.
" "	"	3.219, pulv.	
" "	"	3.203	
" "	"	3.233	Two lots. Schröder. Ber. 11, 2129.
Lead formate	$\text{Pb C}_2 \text{H}_2 \text{O}_4$	4.56, 11°	Bodeker and Giesecke. B. D. Z.
" "	"	4.507	Schröder. Dm. 1873.
" "	"	4.555	
" "	"	4.610, cryst.	
" "	"	4.621, pulv.	Schröder. Ber. 8, 199.
Manganese formate	$\text{Mn C}_2 \text{H}_2 \text{O}_4$	2.205	
" "	$\text{Mn C}_2 \text{H}_2 \text{O}_4 \cdot 2 \text{H}_2 \text{O}$	1.917	" "
" "	"	1.954	
" "	"	1.959	
Nickel formate	$\text{Ni C}_2 \text{H}_2 \text{O}_4 \cdot 2 \text{H}_2 \text{O}$	2.1547, 20°.2	H. Stallo. F. W. C.
Cobalt formate	$\text{Co C}_2 \text{H}_2 \text{O}_4 \cdot 2 \text{H}_2 \text{O}$	2.1089, 20°.2	" "
" "	"	2.1286, 22°	
Copper formate	$\text{Cu C}_2 \text{H}_2 \text{O}_4 \cdot 4 \text{H}_2 \text{O}$	1.815, 20°	
" "	"	1.811, pulv.	Schröder. Ber. 8, 199.
" "	"	1.795, cryst.	
" "	"	1.831	
Sroutium copper formate	$\text{Sr}_2 \text{Cu (C H O}_2)_6$	2.612	Schröder. Ber. 14, 21.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Strontium copper formate	$\text{Sr}_2\text{Cu}(\text{CHO}_2)_6 \cdot 8\text{H}_2\text{O}$	2.132 -----	Schröder. Ber. 14, 24.
“ “	“	2.133 -----	
Barium copper formate	$\text{Ba}_2\text{Cu}(\text{CHO}_2)_6 \cdot 4\text{H}_2\text{O}$	2.747 -----	“ “
Didymium formate	$\text{Di}(\text{C}_2\text{H}_3\text{O}_2)_3$	3.427 -----	Cleve. U. N. A. 1885.
“ “	“	3.433 -----	
Samarium formate	$\text{Sm}(\text{C}_2\text{H}_3\text{O}_2)_3$	3.730 -----	“ “
“ “	“	3.732 -----	
“ “	“	3.737 -----	
Sodium acetate	$\text{Na C}_2\text{H}_3\text{O}_2$	1.421, 14° -----	Bödeker. B. D. Z.
“ “	“	1.524 -----	Schröder. Ber. 14, 1608.
“ “	“	1.529 -----	Brügelmann. Ber. 17, 2359.
“ “	$\text{Na C}_2\text{H}_3\text{O}_2 \cdot 3\text{H}_2\text{O}$	1.420 -----	Buignet. J. 14, 15.
“ “	“	1.40, 12° -----	Bödeker. B. D. Z.
“ “	“	1.450 -----	Schröder. Ber. 14, 1608.
“ “	“	1.456 -----	
Sodium triacetate	$\text{Na C}_6\text{H}_{11}\text{O}_6$	1.47 -----	Lescoeur. C. R. 78, 1046.
Potassium triacetate	$\text{K C}_6\text{H}_{11}\text{O}_6$	1.34 -----	“ “
Silver acetate	$\text{Ag C}_2\text{H}_3\text{O}_2$	3.1281, 15° -----	Liebig and Redtenbacher. P. M. (3), 19, 227.
“ “	“	3.222 -----	Schröder. Ber. 9, 1888.
“ “	“	3.259 -----	
Magnesium acetate	$\text{Mg}(\text{C}_2\text{H}_3\text{O}_2)_2$	1.419 -----	Schröder. Ber. 14, 1610.
“ “	“	1.422 -----	
“ “	$\text{Mg}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 4\text{H}_2\text{O}$	1.453 -----	“ “
“ “	“	1.455 -----	
“ “	“	1.4487 -----	Kubel. Ber. 19, ref. 283.
Zinc acetate	$\text{Zn}(\text{C}_2\text{H}_3\text{O}_2)_2$	1.810 -----	Schröder. Ber. 14, 1610.
“ “	“	1.869 -----	
“ “	$\text{Zn}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 2\text{H}_2\text{O}$	1.735 -----	“ “
“ “	$\text{Zn}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$	1.7175, 12° -----	Bödeker. B. D. Z.
Cadmium acetate	$\text{Cd}(\text{C}_2\text{H}_3\text{O}_2)_2$	2.329 -----	Schröder. Ber. 14, 1611.
“ “	“	2.352 -----	
“ “	$\text{Cd}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 2\text{H}_2\text{O}$	1.998 -----	“ “
“ “	“	2.021 -----	
Mercuric acetate	$\text{Hg}(\text{C}_2\text{H}_3\text{O}_2)_2$	3.2544, 22° -----	Hagemann. F. W. C.
“ “	“	3.2861, 23° -----	
Strontium acetate	$\text{Sr}(\text{C}_2\text{H}_3\text{O}_2)_2$	2.099 -----	Schröder. Ber. 14, 1608.
“ “	$2\text{Sr}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$	1.981 -----	“ “
“ “	“	2.018 -----	
Barium acetate	$\text{Ba}(\text{C}_2\text{H}_3\text{O}_2)_2$	2.440 -----	Schröder. Ber. 11, 2129.
“ “	“	2.486 -----	
“ “	“	2.316 -----	Two lots. Schröder. Ber. 12, 561.
“ “	“	2.440 -----	
“ “	“	2.480 -----	Schröder. Ber. 14, 1608.
“ “	$\text{Ba}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$	2.19, 13° -----	Bödeker. B. D. Z.
“ “	$\text{Ba}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$	2.014 -----	Schröder. Ber. 14, 1608.
“ “	“	2.026 -----	
Lead acetate	$\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2$	3.238 -----	Schröder. Ber. 14, 1609.
“ “	“	3.264 -----	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lead acetate	$\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$	2.496	Buignet. J. 14, 15.
" "	"	2.559, 13°	Schröder. Dm. 1873.
" "	"	2.540	Schröder. Ber. 14,
" "	"	2.560	1609.
" "	"	2.460	W. C. Smith. Am. J. P. 53, 145.
Manganese acetate	$\text{Mn}(\text{C}_2\text{H}_3\text{O}_2)_2$	1.737	Schröder. Ber. 14, 1610.
" "	"	1.753	
" "	$\text{Mn}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 4\text{H}_2\text{O}$	1.588	" "
" "	"	1.590	
Nickel acetate	$\text{Ni}(\text{C}_2\text{H}_3\text{O}_2)_2$	1.797	" "
" "	"	1.799	
" "	$\text{Ni}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 4\text{H}_2\text{O}$	1.7346, 17° 2	H. Stallo. F. W. C.
" "	"	1.7443, 15° 7	
" "	"	1.734	
" "	"	1.753	
Cobalt acetate	$\text{Co}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 4\text{H}_2\text{O}$	1.7031, 15° 7	H. Stallo. F. W. C.
" "	"	1.7043, 18° 7	
Copper acetate	$\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2$	1.920	Schröder. Ber. 14, 1609.
" "	"	1.939	
" "	$\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$	1.914, 20°	Gehlen. Ann. (1), 83, 213.
" "	"	1.880, m. of 4.	Schröder. Dm. 1873.
" "	"	1.875, extreme	
" "	"	1.885, 11°.	
" "	"	1.875	
" "	"	1.890	Schröder. Ber. 14, 1609.
Didymium acetate	$\text{Di}(\text{C}_2\text{H}_3\text{O}_2)_3$	2.125, 13° 5	Cleve. U. S. A. 1885.
" "	"	2.130, 16° 5	
" "	$\text{Di}(\text{C}_2\text{H}_3\text{O}_2)_3 \cdot \text{H}_2\text{O}$	2.230	" "
" "	"	2.244, 20°	
" "	$\text{Di}(\text{C}_2\text{H}_3\text{O}_2)_3 \cdot 4\text{H}_2\text{O}$	1.881	" "
" "	"	1.884, 13° 5	
Samarium acetate	$\text{Sm}(\text{C}_2\text{H}_3\text{O}_2)_3$	2.208, 18° 3	" "
" "	$\text{Sm}(\text{C}_2\text{H}_3\text{O}_2)_3 \cdot 4\text{H}_2\text{O}$	1.942, 14° 5	
" "	"	1.938, 15° 5	" "
Calcium copper acetate	$\text{CaCu}(\text{C}_2\text{H}_3\text{O}_2)_4 \cdot 8\text{H}_2\text{O}$	1.4206	Schabus. J. 3, 393.
Lithium uranyl acetate	$\text{LiUO}_2(\text{C}_2\text{H}_3\text{O}_2)_3 \cdot \frac{1}{2}\text{H}_2\text{O}$	2.280, 15°	Wyruboff. B. S. M. 8, 118.
Sodium uranyl acetate	$\text{NaUO}_2(\text{C}_2\text{H}_3\text{O}_2)_3$	2.55, 12°	Bodeker and Giessecke. B. D. Z.
Sodium uranyl monochloroacetate.	$\text{NaUO}_2(\text{C}_2\text{H}_2\text{ClO}_2)_3 \cdot 2\text{H}_2\text{O}$	2.748, 14°	Clarke. A. C. J. 2, 331.
Silver propionate	$\text{Ag}(\text{C}_3\text{H}_5\text{O}_2)$	2.714	Schröder. Ber. 10, 1872.
Barium propionate	$\text{Ba}(\text{C}_3\text{H}_5\text{O}_2)_2$	2.067, 22° 3	Stern. F. W. C.
" "	"	1.970	Schröder. Ber. 11, 2129.
Didymium propionate	$\text{Di}(\text{C}_3\text{H}_5\text{O}_2)_3$	1.861, 12° 5	Cleve. U. S. A. 1885.
" "	"	1.741, 12° 5	
" "	"	1.742, 13°	" "
Samarium propionate	$\text{Sm}(\text{C}_3\text{H}_5\text{O}_2)_3$	1.894, 14°	" "
" "	$\text{Sm}(\text{C}_3\text{H}_5\text{O}_2)_3 \cdot 3\text{H}_2\text{O}$	1.784	
" "	"	1.786	
" "	"	1.788, 13° 2	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silver butyrate -----	Ag C <sub>4</sub> H <sub>7</sub> O <sub>2</sub> -----	2.353, 4° -----	Schröder. Ber. 10, 848.
Barium butyrate -----	Ba (C <sub>4</sub> H <sub>7</sub> O <sub>2</sub> ) <sub>2</sub> -----	1.768, 22° -----	Stern. F. W. C.
Barium isobutyrate -----	" -----	1.779 -----	Schröder. Ber. 11, 2130.
" " -----	" -----	1.800 -----	
Silver isovalerate. Ppt. -----	Ag C <sub>5</sub> H <sub>9</sub> O <sub>2</sub> -----	2.110 -----	Schröder. Ber. 10, 848.
" " Cryst. -----	" -----	2.118 -----	
Silver caproate -----	Ag C <sub>6</sub> H <sub>11</sub> O <sub>2</sub> -----	2.029, ppt. -----	} From two caproic acids, probably not identical.
" " -----	" -----	2.052, cryst. -----	
" " -----	" -----	2.053, " -----	
" " -----	" -----	1.866, " -----	
" " -----	" -----	1.877, " -----	Schröder. Ber. 10, 1872.
Silver caprylate -----	Ag C <sub>8</sub> H <sub>15</sub> O <sub>2</sub> -----	1.740, ppt. -----	
" " -----	" -----	1.771, cryst. -----	Schröder. Ber. 10, 1873.
Potassium methylsulphate -----	K C H <sub>3</sub> S O <sub>4</sub> -----	2.057 -----	Schröder. Ber. 11, 2020.
Barium methylsulphate -----	Ba (CH <sub>3</sub> SO <sub>4</sub> ) <sub>2</sub> . 2H <sub>2</sub> O -----	2.276, 20°.2 -----	Geppert. F. W. C.
" " -----	" -----	2.258 -----	Schröder. Ber. 11, 2130.
" " -----	" -----	2.275 -----	
Potassium ethylsulphate -----	K C <sub>2</sub> H <sub>5</sub> S O <sub>4</sub> -----	1.792 -----	Schröder. Ber. 11, 2020.
" " -----	" -----	1.809 -----	
Barium ethylsulphate -----	Ba (C <sub>2</sub> H <sub>5</sub> SO <sub>4</sub> ) <sub>2</sub> . 2H <sub>2</sub> O -----	2.0714, 22°.6 -----	Geppert. F. W. C.
" " -----	" -----	2.080, 21°.7 -----	
" " -----	" -----	2.055 -----	Schröder. Ber. 11, 2130.
Didymium ethylsulphate -----	Di (C <sub>2</sub> H <sub>5</sub> SO <sub>4</sub> ) <sub>3</sub> . 9H <sub>2</sub> O -----	1.860, 17°.8 -----	Cleve. U. N. A. 1885.
" " -----	" -----	1.867, 18° -----	
Samarium ethylsulphate -----	Sm (C <sub>2</sub> H <sub>5</sub> SO <sub>4</sub> ) <sub>3</sub> . 9H <sub>2</sub> O -----	1.874 -----	" " 20°.8 -----
" " -----	" -----	1.885 -----	
Potassium propylsulphate -----	K C <sub>3</sub> H <sub>7</sub> S O <sub>4</sub> -----	1.794 -----	Schröder. Ber. 11, 2020.
" " -----	" -----	1.831 -----	
Barium propylsulphate -----	Ba (C <sub>3</sub> H <sub>7</sub> SO <sub>4</sub> ) <sub>2</sub> . 2H <sub>2</sub> O -----	1.839 -----	} 20°.5 -----
" " -----	" -----	1.844 -----	
" " -----	" -----	1.844 -----	Schröder. Ber. 11, 2130.
Potassium isobutylsulphate. -----	K C <sub>4</sub> H <sub>9</sub> S O <sub>4</sub> -----	1.472 -----	Schröder. Ber. 11, 2020.
" " -----	" -----	1.486 -----	
Barium isobutylsulphate -----	Ba (C <sub>4</sub> H <sub>9</sub> SO <sub>4</sub> ) <sub>2</sub> . 2H <sub>2</sub> O -----	1.714, 22° -----	Whetstone. F.W.C.
" " -----	" -----	1.743, 24°.3 -----	
" " -----	" -----	1.778, 21°.2 -----	Schuermann. F.W. C.
" " -----	" -----	1.727 -----	
" " -----	" -----	1.738 -----	Schröder. Ber. 11, 2130.
Potassium amylsulphate -----	K C <sub>5</sub> H <sub>11</sub> S O <sub>4</sub> -----	1.401 -----	Schröder. Ber. 11, 2020.
" " -----	" -----	1.418 -----	
Barium amylsulphate -----	Ba (C <sub>5</sub> H <sub>11</sub> SO <sub>4</sub> ) <sub>2</sub> . 2H <sub>2</sub> O -----	1.623, 21°.2 -----	Whetstone. F.W.C.
" " -----	" -----	1.632, 22° -----	
" " -----	" -----	1.638 -----	Schröder. Ber. 11, 2130.
" " -----	" -----	1.641 -----	
Potassium methylxanthate -----	K C H <sub>3</sub> C O S <sub>2</sub> -----	1.6754, 15°.2 -----	Bishop. F.W. C.
" " -----	" -----	1.7002 -----	
Potassium ethylxanthate -----	K C <sub>2</sub> H <sub>5</sub> C O S <sub>2</sub> -----	1.558, 21° -----	Geppert. F. W. C.
" " -----	" -----	1.5664, 18°.2 -----	
" " -----	" -----	1.5576, 21°.5 -----	H. Stallo. F. W. C.
Potassium isobutylxanthate. -----	K C <sub>4</sub> H <sub>9</sub> C O S <sub>2</sub> -----	1.3713, 15° -----	
" " -----	" -----	1.3832, 14°.5 -----	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Lithium oxalate	$\text{Li}_2 \text{C}_2 \text{O}_4$	2.1213, 17° 5'	Stolba. J. 1880, 283.
Sodium hydrogen oxalate	$\text{Na H C}_2 \text{O}_4 \cdot \text{H}_2 \text{O}$	2.315	Buignet. J. 14, 15.
Potassium oxalate	$\text{K}_2 \text{C}_2 \text{O}_4 \cdot \text{H}_2 \text{O}$	2.104, m. of 2	Playfair and Joule.
" " "	"	2.08	M. C. S. 2, 401.
" " "	"	Schiff. J. 12, 16.	
Potassium hydrogen oxalate.	$\text{K H C}_2 \text{O}_4$	1.965, m. of 2	Playfair and Joule.
" " "	"	M. C. S. 2, 401.	
" " "	"	2.050	Schiff. J. 12, 16.
" " "	"	2.088	Buignet. J. 14, 15.
Potassium quadroxalate	$\text{K H}_3 (\text{C}_2 \text{O}_4)_2 \cdot 2 \text{H}_2 \text{O}$	1.817	Playfair and Joule.
" " "	"	M. C. S. 2, 401.	
" " "	"	1.765	Schiff. J. 12, 16.
" " "	"	1.836	Buignet. J. 14, 15.
Rubidium quadroxalate	$\text{Rb H}_3 (\text{C}_2 \text{O}_4)_2 \cdot 2 \text{H}_2 \text{O}$	2.1246, 18°	Stolba. J. 1877, 243.
Ammonium oxalate	$\text{Am}_2 \text{C}_2 \text{O}_4 \cdot \text{H}_2 \text{O}$	1.461, m. of 2	Playfair and Joule.
" " "	"	M. C. S. 2, 401.	
" " "	"	1.475	Schiff. J. 12, 16.
" " "	"	1.470	Buignet. J. 14, 15.
" " "	"	1.501	Schröder. Dm. 1873.
" " "	"	1.502	
Ammonium hydrogen oxalate.	$\text{Am H C}_2 \text{O}_4 \cdot \text{H}_2 \text{O}$	1.563, m. of 3	Playfair and Joule.
" " "	"	M. C. S. 2, 401.	
Ammonium quadroxalate	$\text{Am H}_3 (\text{C}_2 \text{O}_4)_2 \cdot \text{H}_2 \text{O}$	1.556	Schiff. J. 12, 16.
" " "	"	1.589, m. of 2	Playfair and Joule.
" " "	"	M. C. S. 2, 401.	
" " "	"	1.607	Schiff. J. 12, 16
Silver oxalate	$\text{Ag}_2 \text{C}_2 \text{O}_4$	4.96, 10°	Husemann. B. D. Z.
" " "	"	5.005, 4°, ppt.	Schröder. Ber. 10, 849.
" " "	"	5.029, 4°, cryst.	
Thallium oxalate	$\text{Tl}_2 \text{C}_2 \text{O}_4$	6.31	Lamy and Des Cloizeaux. Nature, 1, 442.
Thallium hydrogen oxalate.	$\text{Tl H C}_2 \text{O}_4 \cdot \text{H}_2 \text{O}$	3.971	" "
Zinc oxalate	$\text{Zn C}_2 \text{O}_4$	2.547, 18° 3'	Wilson. F. W. C.
" " "	"	2.562, 24° 5'	
" " "	"	2.582, 17° 5'	
Cadmium oxalate	$\text{Cd C}_2 \text{O}_4$	3.310, 17°	Freeman. F. W. C.
" " "	"	3.320, 18°	
Calcium oxalate	$\text{Ca C}_2 \text{O}_4$	2.106	Schröder. Dm. 1873.
" " "	"	2.181	Schröder. Ber. 12, 561.
" " "	"	2.182	
" " "	"	2.200	
Barium oxalate.	$\text{Ba C}_2 \text{O}_4$	2.6578	Schweitzer. University of Missouri, special pub. 1876.
Lead oxalate	$\text{Pb C}_2 \text{O}_4$	5.018	Schröder. Dm. 1873.
" " "	"	5.035	
Manganese oxalate	$\text{Mn C}_2 \text{O}_4$	2.422, 21° 8'	Freeman. F. W. C.
" " "	"	2.459, 20° 7'	
" " "	"	2.457, 21° 8'	
Humboldtine	$2 \text{Fe C}_2 \text{O}_4 \cdot 3 \text{H}_2 \text{O}$	2.13	Dana's Mineralogy.
" " "	"	2.489	
Nickel oxalate	$\text{Ni C}_2 \text{O}_4$	2.218, 19°	Freeman. F. W. C.
" " "	"	2.2285, 19° 5'	
" " "	"	2.235, 18° 5'	
" " "	"	2.296, 20° 5'	
Cobalt oxalate	$\text{Co C}_2 \text{O}_4$	2.296, 20° 5'	" "
" " "	"	2.325, 19°	

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Stannous oxalate -----	$\text{Sn C}_2\text{O}_4$ -----	3.558, 18 -----	Wilson. F.W. C.
“ “ -----	“ -----	3.576, 22°.5 -----	
“ “ -----	“ -----	3.584, 23°.5 -----	
Thorium oxalate -----	$\text{Th (C}_2\text{O}_4)_2$ -----	4.637, 16° -----	Clarke. A. C. J. 2, 175.
Uranyl oxalate -----	$\text{U O}_2 \cdot \text{C}_2\text{O}_4 \cdot 3 \text{H}_2\text{O}$ -----	2.98 -----	Ebelmen. J. P. C. 27, 391.
Potassium copper oxalate.	$\text{K}_2\text{Cu (C}_2\text{O}_4)_2 \cdot 2 \text{H}_2\text{O}$ -----	2.288, m. of 2. -----	Playfair and Joule. M. C. S. 2, 401.
Ammonium copper oxalate.	$\text{Am}_2\text{Cu (C}_2\text{O}_4)_2 \cdot 2 \text{H}_2\text{O}$ -----	1.923 -----	“ “
Potassium chromoxalate.	$\text{K}_3(\text{Cr C}_6\text{O}_{12})_2 \cdot 3 \text{H}_2\text{O}$ -----	2.1039, 23° -----	Bishop. F.W. C.
“ “ -----	“ -----	2.1464, 24° -----	
Strontium chromoxalate.	$\text{Sr}_3(\text{Cr C}_6\text{O}_{12})_2 \cdot 10 \text{H}_2\text{O}$ -----	2.148, 8°.8 -----	Kebler. F.W. C.
Strontium potassium chromoxalate.	$\text{Sr K (Cr C}_6\text{O}_{12})_2 \cdot 6 \text{H}_2\text{O}$ -----	2.155, 12°.8 -----	“ “
Barium chromoxalate.	$\text{Ba}_3(\text{Cr C}_6\text{O}_{12})_2$ -----	2.570, 6°.8 -----	“ “
“ “ -----	$\text{Ba}_3(\text{Cr C}_6\text{O}_{12})_2 \cdot 6 \text{H}_2\text{O}$ -----	2.445, 13°.9 -----	“ “
“ “ -----	$\text{Ba}_3(\text{Cr C}_6\text{O}_{12})_2 \cdot 12 \text{H}_2\text{O}$ -----	2.372, 27° -----	“ “
Sodium ferroxalate -----	$2 \text{Na}_3(\text{Fe C}_6\text{O}_{12}) \cdot 11 \text{H}_2\text{O}$ -----	1.9731, 17°.5 -----	Eder and Valenta. Ber. 14, 1106.
Ammonium ferroxalate --	$\text{Am}_3(\text{Fe C}_6\text{O}_{12}) \cdot 8 \text{H}_2\text{O}$ -----	1.7785, 17°.5 -----	“ “
Platosoxalic acid -----	$\text{Pt H}_2(\text{C}_2\text{O}_4)_2 \cdot \text{H}_2\text{O}$ -----	2.94, 14° -----	Söderbaum. Upsala Diss. 1888.
Sodium platosoxalate --	$\text{Na}_2\text{Pt (C}_2\text{O}_4)_2 \cdot 4 \text{H}_2\text{O}$ -----	2.89, 17°.2 -----	“ “
“ “ -----	$\text{Na}_2\text{Pt (C}_2\text{O}_4)_2 \cdot 5 \text{H}_2\text{O}$ -----	2.92, 17°.2 -----	“ “
Potassium platosoxalate.	$\text{K}_2\text{Pt (C}_2\text{O}_4)_2 \cdot 2 \text{H}_2\text{O}$ -----	3.037, 11°.6 -----	“ “
“ “ Light.	“ -----	3.036, 12° -----	
“ “ Dark.	“ -----	3.012, 12° -----	“ “
Ammonium platosoxalate.	$\text{Am}_2\text{Pt (C}_2\text{O}_4)_2 \cdot 2 \text{H}_2\text{O}$ -----	2.614, 11°.7 -----	“ “
“ “ Light.	“ -----	“ -----	“ “
“ “ Dark.	“ -----	2.58, 11°.5 -----	“ “
Platodiamine platosoxalate.	$\text{Pt (NH}_3)_4 \text{Pt (C}_2\text{O}_4)_2$ -----	3.51, 13°.5 -----	“ “
“ “ Light.	“ -----	“ -----	“ “
“ “ Dark.	“ -----	3.48, 13°.5 -----	“ “
Didymium nitratooxalate.	$\text{Di H}_2(\text{N O}_3)_2(\text{C}_2\text{O}_4)_3 \cdot 11 \text{H}_2\text{O}$ -----	2.424 -----	{ Cleve. U. N. A. 1885.
“ “ -----	“ -----	2.425 -----	
Ammonium succinate -----	$\text{Am}_2 \text{C}_4 \text{H}_4 \text{O}_4$ -----	1.367, 10° -----	Zachariae. B. D. Z.
Silver succinate -----	$\text{Ag}_2 \text{C}_4 \text{H}_4 \text{O}_4$ -----	3.518, 10° -----	Husemann. B. D. Z.
“ “ -----	“ -----	3.807 -----	Schröder. Ber. 10, 849.
“ “ -----	“ -----	3.893 -----	
Barium succinate -----	$\text{Ba C}_4 \text{H}_4 \text{O}_4$ -----	2.696 -----	Schröder. Ber. 11, 2129.
“ “ -----	“ -----	2.699 -----	
Lead succinate -----	$\text{Pb C}_4 \text{H}_4 \text{O}_4$ -----	3.800, 10° -----	Husemann. B. D. Z.
Ammonium malate -----	$\text{Am}_2 \text{C}_4 \text{H}_4 \text{O}_5$ -----	1.509 -----	Wyrouboff. Bei. 8, 24.
Ammonium hydrogen malate.	$\text{Am C}_4 \text{H}_5 \text{O}_5$ -----	1.55 -----	Pasteur. J. 4, 392.
Silver malate -----	$\text{Ag}_2 \text{C}_4 \text{H}_4 \text{O}_5$ -----	4.0016 -----	Liebig and Redtenbacher. A. C. P. 38, 139.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Sodium tartrate	$\text{Na}_2 \text{C}_4 \text{H}_4 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$	1.794	Buignet. J. 14, 15.
Potassium tartrate	$\text{K}_2 \text{C}_4 \text{H}_4 \text{O}_6$	1.975	Schiff. J. 12, 16.
" "	$\text{K}_2 \text{C}_4 \text{H}_4 \text{O}_6 \cdot \text{H}_2 \text{O}$	1.960	Buignet. J. 14, 15.
Potassium hydrogen tartrate.	$\text{K} \text{H} \text{C}_4 \text{H}_4 \text{O}_6$	1.943	Schabus. J. 3, 378.
" " "	"	1.973	Schiff. J. 12, 16.
" " "	"	1.956	Buignet. J. 14, 15.
Ammonium tartrate	$\text{Am}_2 \text{C}_4 \text{H}_4 \text{O}_6$	1.566	Schiff. J. 12, 16.
" " "	"	1.523	Buignet. J. 14, 15.
" " "	"	1.601	Wyruboff. Bei. 8, 24.
Ammonium hydrogen tartrate.	$\text{Am} \text{H} \text{C}_4 \text{H}_4 \text{O}_6$	1.680	Schiff. J. 12, 16.
Sodium potassium tartrate	$\text{Na} \text{K} \text{C}_4 \text{H}_4 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$	1.74	Mitscherlich.
" " " "	"	1.767	Schiff. J. 12, 16.
" " " "	"	1.790	Buignet. J. 14, 15.
" " " "	"	1.77	W. C. Smith. Am. J. P. 53, 145.
Sodium ammonium tartrate.	$\text{Na} \text{Am} \text{C}_4 \text{H}_4 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$	1.58	Mitscherlich.
" " " "	"	1.576	Pasteur. J. 2, 309.
" " " "	"	1.587	Schiff. J. 12, 16.
Potassium ammonium tartrate.	$\text{K} \text{Am} \text{C}_4 \text{H}_4 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$	1.700	" "
Rubidium tartrate	$\text{Rb}_2 \text{C}_4 \text{H}_4 \text{O}_6$	2.692	Wyruboff. Bei. 8, 24.
" " "	$\text{Rb}_2 \text{C}_4 \text{H}_4 \text{O}_6 \cdot \text{H}_2 \text{O}$	2.584	Wyruboff. B. S. M. 6, 311.
Rubidium hydrogen tartrate.	$\text{Rb} \text{H} \text{C}_4 \text{H}_4 \text{O}_6 \cdot \frac{1}{2} \text{H}_2 \text{O}$	2.399	" "
Rubidium lithium tartrate	$\text{Rb} \text{Li} \text{C}_4 \text{H}_4 \text{O}_6 \cdot \text{H}_2 \text{O}$	2.281	Wyruboff. B. S. M. 6, 53.
Rubidium sodium tartrate	$\text{Rb} \text{Na} \text{C}_4 \text{H}_4 \text{O}_6 \cdot 2 \frac{1}{2} \text{H}_2 \text{O}$	2.200	Wyruboff. Ann. (6), 9, 221.
Silver tartrate	$\text{Ag}_2 \text{C}_4 \text{H}_4 \text{O}_6$	3.4321	Liebig and Redtenbacher. A. C. P. 38, 139.
Thallium tartrate	$\text{Tl}_2 \text{C}_4 \text{H}_4 \text{O}_6$	5.110	Wyruboff. B. S. M. 6, 311.
" " "	$\text{Tl}_2 \text{C}_4 \text{H}_4 \text{O}_6 \cdot \frac{1}{2} \text{H}_2 \text{O}$	4.658	Lamy and Des Cloizeaux. Nature, 1, 142.
" " "	"	4.740	Wyruboff. B. S. M. 9, 102.
Thallium hydrogen tartrate.	$\text{Tl} \text{H} \text{C}_4 \text{H}_4 \text{O}_6$	3.496	Lamy and Des Cloizeaux. Nature, 1, 142.
" " "	$\text{Tl} \text{H} \text{C}_4 \text{H}_4 \text{O}_6 \cdot \frac{1}{2} \text{H}_2 \text{O}$	3.399	Wyruboff. B. S. M. 6, 311.
Thallium lithium tartrate	$\text{Tl} \text{Li} \text{C}_4 \text{H}_4 \text{O}_6 \cdot \text{H}_2 \text{O}$	3.356	Wyruboff. B. S. M. 6, 53.
Thallium sodium tartrate	$\text{Tl} \text{Na} \text{C}_4 \text{H}_4 \text{O}_6 \cdot 2 \frac{1}{2} \text{H}_2 \text{O}$	3.120	Wyruboff. Ann. (6), 9, 221.
Strontium tartrate	$\text{Sr} \text{C}_4 \text{H}_4 \text{O}_6$	2.575, 17° 3	Joslin. F. W. C.
" " "	"	2.579, 17° 1	
" " "	"	2.593, 17° 4	
" " "	$\text{Sr} \text{C}_4 \text{H}_4 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$	1.961, 19° 2	
" " "	"	1.966, 19° 2	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Strontium tartrate-----	$\text{Sr C}_4 \text{H}_4 \text{O}_6 \cdot 4 \text{H}_2 \text{O}$	1.972, 18° 1	Joslin. F. W. C.
Barium tartrate-----	$\text{Ba C}_4 \text{H}_4 \text{O}_6$	2.965, 21° 5	" "
" "-----	"	2.974, 21° 9	
" "-----	"	2.980, 20° 8	
Lead tartrate-----	$\text{Pb C}_4 \text{H}_4 \text{O}_6$	3.998, 16° 5	
" "-----	"	4.001, 17° 5	" "
" "-----	"	4.037, 17° 7	
Potassium tartrantimonite, or tartar-emetie--	$2 \text{K C}_4 \text{H}_4 \text{Sb O}_7 \cdot \text{H}_2 \text{O}$	2.5569	Pasteur. Ann. (3), 28, 86.
" "-----	"	2.607	Schiff. J. 12, 16.
" "-----	"	2.588	Buignet. J. 14, 15.
" "-----	"	2.597	Topsoë and Christiansen.
Ammonium tartrantimonite.	$2 \text{Am C}_4 \text{H}_4 \text{Sb O}_7 \cdot \text{H}_2 \text{O}$	2.324	Topsoë. C. C. 4, 76.
Silver tartrantimonite-----	$\text{Ag C}_4 \text{H}_4 \text{Sb O}_7$	3.4805, 18° 2	Evans. F. W. C.
Thallium tartrantimonite-----	$2 \text{Tl C}_4 \text{H}_4 \text{Sb O}_7 \cdot \text{H}_2 \text{O}$	3.99	Lamy and Des Cloizeaux. Nature, 1, 142.
Barium tartrantimonite --	$\text{Ba (C}_4 \text{H}_4 \text{Sb O}_7)_2 \cdot 2 \text{H}_2 \text{O}$	3.112, 19°	Joslin. F. W. C.
Potassium borotartrate----	$\text{K C}_4 \text{H}_4 \text{B O}_7$	1.832	Buignet. J. 14, 15.
Potassium racemate-----	$\text{K}_2 \text{C}_4 \text{H}_4 \text{O}_6 \cdot 2 \text{H}_2 \text{O}$	1.58	Mitscherlich.
Potassium hydrogen racemate.	$\text{K H C}_4 \text{H}_4 \text{O}_6$	1.954	Wyruboff. B. S. M. 6, 311.
Potassium lithium racemate.	$\text{K Li C}_4 \text{H}_4 \text{O}_6$	1.610	Wyruboff. B. S. M. 6, 53.
Potassium sodium racemate.	$\text{K Na C}_4 \text{H}_4 \text{O}_6 \cdot 3 \text{H}_2 \text{O}$	1.783	Wyruboff. B. S. C. 45, 52.
Rubidium racemate-----	$\text{Rb}_2 \text{C}_4 \text{H}_4 \text{O}_6$	2.640	Wyruboff. Bei. 8, 24.
Rubidium hydrogen racemate.	$\text{Rb H C}_4 \text{H}_4 \text{O}_6$	2.282	Wyruboff. B. S. M. 6, 311.
Rubidium lithium racemate.	$\text{Rb Li C}_4 \text{H}_4 \text{O}_6$	2.192	Wyruboff. Bei. 8, 24.
Ammonium racemate----	$\text{Am}_2 \text{C}_4 \text{H}_4 \text{O}_6$	1.601	Wyruboff. B. S. M. 9, 102.
Ammonium hydrogen racemate.	$\text{Am H C}_4 \text{H}_4 \text{O}_6$	1.636	Wyruboff. B. S. M. 6, 311.
Ammonium sodium racemate.	$\text{Am Na C}_4 \text{H}_4 \text{O}_6 \cdot \text{H}_2 \text{O}$	1.740	Wyruboff. Ann. (6), 9, 221.
Silver racemate -----	$\text{Ag}_2 \text{C}_4 \text{H}_4 \text{O}_6$	3.7752	Liebig and Redtenbacher. A. C. P. 38, 139.
Thallium racemate -----	$\text{Tl}_2 \text{C}_4 \text{H}_4 \text{O}_6$	4.783	{ Two varieties. Wyruboff. B. S. M. 9, 102.
" "-----	"	4.803	
" "-----	$2 \text{Tl}_2 \text{C}_4 \text{H}_4 \text{O}_6 \cdot \text{H}_2 \text{O}$	4.659	
Thallium hydrogen racemate.	$\text{Tl H C}_4 \text{H}_4 \text{O}_6$	3.494	Wyruboff. B. S. M. 6, 311.
Thallium lithium racemate.	$\text{Tl Li C}_4 \text{H}_4 \text{O}_6 \cdot 2 \text{H}_2 \text{O}$	3.144	Wyruboff. Ann. (6), 9, 221.
Thallium sodium racemate	$\text{Tl Na C}_4 \text{H}_4 \text{O}_6 \cdot 2 \text{H}_2 \text{O}$	3.289	" "

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Potassium racemantimonite.	$2 K C_4 H_4 Sb O_7 \cdot H_2 O$	2.4768	Pasteur. Ann. (3), 28, 86.
Potassium citrate*	$K_3 C_6 H_5 O_7 \cdot H_2 O$	1.98	W. C. Smith. Am. J. P. 53, 145.
Trisodium citrate	$2 Na_3 C_6 H_5 O_7 \cdot 11 H_2 O$	1.857, 232.5	Blakemore, F.W.C.
"	"	1.859, 212	
Dimmonium citrate	$Am_2 C_6 H_6 O_7$	1.479, 222	" "
Uranyl oleate	$U O_2 (C_{18} H_{33} O_2)_2$	1.13	Gibbons. Ber. 16, 964.
Calcium hippurate	$2 Ca C_{12} H_{16} N_2 O_6 \cdot 3 H_2 O$	1.318	Schabus. J. 3, 411.
Potassium orthonitrophenate.	$K C_6 H_4 N O_3 \cdot H_2 O$	1.682, 202	Post and Mehrrens. Ber. 8, 1552
Silver orthonitrophenate	$Ag C_6 H_4 N O_3$	2.661, 202	" "
Barium orthonitrophenate	$Ba (C_6 H_4 N O_3)_2$	2.3301, 202	" "
Lead orthonitrophenate	$Pb O (C_6 H_4 N O_3)_2 \cdot H_2 O$	2.712, 202	" "
Potassium metanitrophenate.	$K C_6 H_4 N O_3 \cdot 2 H_2 O$	1.691, 202	" "
Barium metanitrophenate	$Ba (C_6 H_4 N O_3)_2 \cdot 2 H_2 O$	2.343, 202	" "
Lead metanitrophenate	$Pb O (C_6 H_4 N O_3)_2$	2.694, 202	" "
Potassium paranitrophenate.	$K C_6 H_4 N O_3 \cdot 2 H_2 O$	1.652, 202	" "
Silver paranitrophenate	$Ag C_6 H_4 N O_3 \cdot 2 H_2 O$	2.652, 202	" "
Barium paranitrophenate	$Ba (C_6 H_4 N O_3)_2 \cdot 8 H_2 O$	2.322, 202	" "
Lead paranitrophenate	$Pb O (C_6 H_4 N O_3)_2 \cdot 2 H_2 O$	2.682, 202	" "
Potassium <i>a</i> dinitrophenate	$K C_6 H_3 N_2 O_5 \cdot H_2 O$	1.778, 202	" "
Silver <i>a</i> dinitrophenate	$Ag C_6 H_3 N_2 O_5 \cdot H_2 O$	2.755, 202	" "
Barium <i>a</i> dinitrophenate	$Ba (C_6 H_3 N_2 O_5)_2 \cdot 4 H_2 O$	2.439, 202	" "
Lead <i>a</i> dinitrophenate	$Pb O H (C_6 H_3 N_2 O_5)_2 \cdot 2 H_2 O$	2.817, 202	" "
Potassium $\beta$ dinitrophenate	$K C_6 H_3 N_2 O_5$	1.757, 202	" "
Silver $\beta$ dinitrophenate	$Ag C_6 H_3 N_2 O_5$	2.733, 202	" "
Barium $\beta$ dinitrophenate	$Ba (C_6 H_3 N_2 O_5)_2 \cdot H_2 O$	2.406, 202	" "
Lead $\beta$ dinitrophenate	$Pb O (C_6 H_3 N_2 O_5)_2$	2.807, 202	" "
Lithium picrate	$Li C_6 H_2 N_3 O_7$	1.716, 190	Beamer. F. W. C.
"	"	1.724, 202	
"	"	1.719, 202	
Potassium picrate	$K C_6 H_2 N_3 O_7$	1.852, 202	Post and Mehrrens. Ber. 8, 1552.
Silver picrate	$Ag C_6 H_2 N_3 O_7$	2.816, 202	" "
Thallium picrate	$Tl C_6 H_2 N_3 O_7$	3.039	Lamy and Des Cloizeaux. Nature, 1, 142.
Barium picrate	$Ba (C_6 H_2 N_3 O_7)_2 \cdot H_2 O$	2.518, 202	Post and Mehrrens. Ber. 8, 1552.
Lead picrate	$Pb (C_6 H_2 N_3 O_7)_2 \cdot H_2 O$	2.831, 202	" "
Samarium picrate	$Sm (C_6 H_2 N_3 O_7)_3 \cdot 8 H_2 O$	1.951, 182.5	Clove. U. S. A. 1885.
Ammonium benzoate	$Am C_7 H_5 O_2$	1.260	Schröder. Ber. 12, 1611.
"	"	1.264	

\* Smith gives this salt under the name "potassil citras," and assigns no formula.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Silver benzoate -----	$\text{Ag C}_7 \text{H}_5 \text{O}_2$ -----	2.258 -----	Schröder. Ber. 9, 1889.
Calcium benzoate -----	$\text{Ca (C}_7 \text{H}_5 \text{O}_2)_2 \cdot 3 \text{H}_2 \text{O}$ -----	1.435 -----	4°-- { Schröder. Ber. 12, 1611.
" " -----	" " -----	1.457 } -----	
Barium benzoate -----	$\text{Ba (C}_7 \text{H}_5 \text{O}_2)_2 \cdot 3 \text{H}_2 \text{O}$ -----	1.792 } -----	
" " -----	" " -----	1.808 } -----	4°-- { Schröder. Ber. 12, 561.
Silver cinnamate -----	$\text{Ag C}_9 \text{H}_7 \text{O}_2$ -----	2.073, 4° -----	
Mellite -----	$\text{Al}_2 \text{C}_{12} \text{O}_{12} \cdot 18 \text{H}_2 \text{O}$ -----	1.636 } -----	" "
" -----	" -----	1.642 } -----	
			Kenngott.

# LXXI. SALTS OF ORGANIC BASES WITH INORGANIC ACIDS.\*

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Tetramethylammonium iodide. " " " " -----	$\text{N (C}_2 \text{H}_5)_4 \text{I}$ -----	1.827, 17° -----	Owens. F. W. C.
" " " " -----	" " -----	1.831, 19° 5 -----	
" " " " -----	" " -----	1.888 } -----	
" " " " -----	" " -----	1.844 } -----	
Tetretlylammonium iodide. " " " " -----	$\text{N (C}_2 \text{H}_5)_4 \text{I}$ -----	1.556 } -----	4°-- { " "
" " " " -----	" " -----	1.559 } -----	
" " " " -----	" " -----	1.561 } -----	
Tetramethylammonium mercury iodide. " " " " -----	$\text{N (C}_2 \text{H}_5)_4 \text{I. Hg I}_2$ -----	3.968, 24° -----	Owens. F. W. C.
" " " " -----	" " -----	3.971, 24° -----	
" " " " -----	" " -----	3.976, 23° 5 -----	
" " " " -----	" " -----	4.003, 23° 2 -----	
Ethylamine platinchloride " " " " -----	$\text{(NC}_2 \text{H}_7 \cdot \text{H Cl})_2 \text{PtCl}_4$ -----	2.250 } -----	19° { Clarke. A. C. J. 2, 175.
" " " " -----	" " -----	2.255 } -----	
Ethylamine aurochloride. " " " " -----	$\text{N C}_2 \text{H}_7 \cdot \text{H Cl. Au Cl}_3$ -----	2.824 -----	Topsoë. S. W. A. 73, 97.
Diethylamine aurochloride. " " " " -----	$\text{NC}_4 \text{H}_{11} \cdot \text{H Cl. Au Cl}_3$ -----	2.436 -----	" "
Triethylamine aurochloride. " " " " -----	$\text{NC}_6 \text{H}_{15} \cdot \text{H Cl. Au Cl}_3$ -----	2.197 -----	" "
Guanidine carbonate. " " " " -----	$\text{(C}_2 \text{H}_5 \text{N}_{3/2} \text{H}_2 \text{C O}_3$ -----	1.238 -----	Schröder. Ber. 13, 1070.
" " " " -----	" " -----	1.251 -----	
Aniline chlorhydrate " " " " -----	$\text{C}_6 \text{H}_7 \text{N. H Cl}$ -----	1.201 } -----	4°-- { Schröder. Ber. 12, 1611.
" " " " -----	" " -----	1.216 } -----	
" " " " -----	" " -----	1.227 } -----	
Aniline iodate. " " " " -----	$\text{C}_6 \text{H}_7 \text{N. II I O}_3$ -----	1.480, 15° -----	Beamer. F. W. C.
Aniline nitrate " " " " -----	$\text{C}_6 \text{H}_7 \text{N. II N O}_3$ -----	1.356 } -----	4°-- { Schröder. Ber. 12, 1611.
" " " " -----	" " -----	1.360 } -----	
Aniline sulphate. " " " " -----	$\text{(C}_6 \text{H}_7 \text{N})_2 \cdot \text{H}_2 \text{S O}_4$ -----	1.377, 4° -----	" "
Aniline tartrantimonite. " " " " -----	$\text{C}_6 \text{H}_7 \text{N. C}_4 \text{H}_5 \text{Sb O}_7$ -----	1.890, 18° -----	Evans. F. W. C.
Rosaniline chlorhydrate. " " " " -----	$\text{C}_{20} \text{H}_{19} \text{N}_3 \cdot \text{H Cl}$ -----	1.220 -----	Rüdorff. Ber. 12, 252.
Diazobenzene nitrate " " " " -----	$\text{C}_6 \text{H}_4 \text{N}_2 \cdot \text{H N O}_3$ -----	1.37 -----	Berthelot and Vieille. Ber. 5, 573.
Berberine chlorhydrate. " " " " -----	$\text{C}_{20} \text{H}_{17} \text{N O}_4 \cdot \text{H Cl}$ -----	1.397, 19° 4 -----	Clarke. A. C. J. 2, 174.
Berberine platinchloride. " " " " -----	$\text{(C}_{20} \text{H}_{17} \text{N O}_4 \cdot \text{H Cl})_2$ -----	1.758, 19° -----	" "
	$\text{Pt Cl}_4$ -----		

\*Aniline tartrantimonite is included in this table for reasons of convenience.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Strychnine platinchloride	$(C_{21}H_{22}N_2O_2 \cdot HCl)_2 \cdot PtCl_4$	1.779, 13°.5	Clarke. A. C. J. 2, 174.
Cinchonine chlorhydrate	$C_{20}H_{24}N_2O \cdot HCl$	1.234	Hesse. J. 15, 371.
Picolinic acid platinchloride.	$(C_6H_5N_2O_2 \cdot HCl)_2 \cdot PtCl_4 \cdot 2H_2O$	2.0672, 21°.8	Weidel. Ber. 12, 1989.
Nicotinic acid platinchloride.	$(C_6H_5N_2O_2 \cdot HCl)_2 \cdot PtCl_4 \cdot 2H_2O$	2.1297, 21°.8	" "
Triethylphosphin platinochloride.	$PtCl_2 \cdot (C_2H_5P)_2$	1.5, 10°	Cebours and Gal. Z. C. 13, 437.

## LXXII. MISCELLANEOUS ORGANIC COMPOUNDS.

NAME.	FORMULA.	SP. GRAVITY.	AUTHORITY.
Ethyl selenite.	$(C_2H_5)_2SeO_3$	1.49, 16°.5	Michaelis. A. C. P. 241, 159.
Glucose with sodium chloride.	$2C_6H_{12}O_6 \cdot NaCl \cdot H_2O$	1.55, 11°	Bodeker. B. D. Z. 1, 59.
Cane sugar with sodium iodide.	$2C_{12}H_{22}O_{11} \cdot 3NaI \cdot 3H_2O$	1.854	Gill. J. C. S. 24, 269.
Ferrous sacrocarbonate	$3C_{12}H_{22}O_3 \cdot 2FeCO_3$	1.85	Tanret. J. C. S. 40, 157.
Salt from lead acetate and potassium triiodide.	$Pb_3K_6C_{36}H_{34}O_{18}I_{17}$	3.684	Johnson. C. N. 37, 110.
Chloraurotriethyl phosphorous ether.	$AuClP(O C_2H_5)_3$	2.025	Lindet. C. R. 103, 1014.

## APPENDIX.

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### NOTE ON THE SPECIFIC GRAVITY OF WOOD.

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Although wood is a substance which does not come within the scope of these tables, the following references to literature are given as a matter of convenience.

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SMITHSONIAN MISCELLANEOUS COLLECTIONS.

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INDEX  
TO THE  
LITERATURE  
OF THE  
SPECTROSCOPE.

ALFRED TUCKERMAN, PH. D.



WASHINGTON:  
PUBLISHED BY THE SMITHSONIAN INSTITUTION.  
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AT WASHINGTON, D. C.

## ADVERTISEMENT.

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With the rapid accumulation of scientific memoirs and discussions, published from year to year in numerous journals and society proceedings, a constantly larger expenditure of time and labor is required by both the investigator and the student, to learn the sources of information and the condition of discovery in any given field. Hence is felt the growing need of classified indexes to the work done in the various fields of research, and hence the corresponding tendency of the age to supply such demand.

The present work aims at a general survey of Spectroscopic Literature, with references to authorities in its more special subdivisions, and it has been prepared for the Institution by Mr. Tuckerman, without other remuneration than the expectation of serving the interests of scientific inquirers.

It has been brought down to the middle of the year 1887.

S. P. LANGLEY,  
*Secretary Smithsonian Institution.*

WASHINGTON, *February*, 1888.



## P R E F A C E .

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This work is intended to be a list of all the books and smaller treatises, especially contributions to scientific periodicals, on the spectroscope and spectrum analysis from the beginning of our knowledge upon the subject until July, 1887; an Index or Bibliography of the Spectroscope and Spectrum Analysis.

It was begun at the suggestion of Dr. Wolcott Gibbs, whose work in connection with the subject is well known.

The object is to enable a chemist to find out at a glance all that has been published in any branch of his subject where the spectroscope is used, and what every writer has published.

The method pursued has been as follows: 1, to examine the bibliographies, booksellers' catalogues, and books on spectrum analysis for books; 2, to examine the scientific periodicals for the shorter treatises, the first and original contributions to the subject, and this was done volume by volume wherever there was no index to a series of years—as in the *Comptes Rendus* and the later volumes of the *Annales de Chemie et de Physique* and of (Poggendorff's, now Wiedemann's) *Annalen der Physik und Chemie*, as well as others. Use was made of the bibliography at the end of Roscoe's *Spectrum Analysis*, and in the reports of the British Association for 1881 and 1884, for such books and articles as the author could not find elsewhere. Credit is also due to the Astor Library and its managers for the means it afforded the author of making this Index.

After the greater part of the material was collected it was divided into such subjects as the titles indicated, in alphabetical order, easy finding being constantly kept in view. Titles have often been repeated more than once so as to make sure of their being found. Finally, at the suggestion of the Smithsonian Institution, the List of Authors was added.

The author hopes that his two objects, fullness and ready access of all the titles, will prove to have been gained.

NEW YORK, 1887.



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# LITERATURE OF THE SPECTROSCOPE.

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## APPARATUS.

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(See Spectro-bolometer.)

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(See Spectro-bolometer.)

## BÖRSCH-APPARATUS.

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## Sur un nouveau collimateur.

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Construction of a compensating eye-piece.

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Die kleinste Ablenkung im Prisma.

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## DIFFRACTION SPECTROSCOPES.

(See "Gratings.")

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## Nouveau spectroscopie à vision directe.

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(See "Solar and Stellar App.")

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Erythroscop und Melanoskop.

Lommel (E.). *Ann. Phys. u. Chem.*, **143**, 483-490.

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Das einfache euthyoptische Spectroskop.

Kessler (F.). *Ann. Phys. u. Chem.*, **151**, 507.

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A reliable finder for a spectro-telescope.

Winlock (Prof.). *Jour. Franklin Inst.*, (3) **60**, 295.

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Der Fixator, ein Ergänzungsapparat des Spectrometers.

Carl's Repert., **17**, 645-651; *Jour. de Phys.*, (2) **1**, 198-199 (Abs.).

## FLAME APPARATUS.

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[A photographic map of the solar spectrum is being made by Prof. Rowland, and some thirty parts of it have been distributed privately. At the end of the year 1887 it extended from wave-length 0.0003675 to wave-length 0.0005796.]

## Large Maps of the Solar Spectrum,

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21, *Oscillation-frequencies.*

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22, *Oxygen in the solar spectrum.*

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## De l'image photochromatique du spectre solaire, et des images obtenus dans la chambre obscure.

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## Ueber directe Photographirung der Sonnenprotuberanzen.

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(Look below under Pocklington.)

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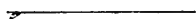
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(Look under Electricity.)

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(Wave-lengths. Spectra of carburetted hydrogen; of carbonic oxide; bioxide of nitrogen; of light at the negative pole; of oxygen; of carbon; of hydrogen; some isolated rays of carburetted hydrogen, and of carbonic oxide.)

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## Ueber die Spectra der Cometen, und ihre Beziehung zu denjenigen gewisser Kohlenverbindungen.

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Mascart (E.). Extrait des Annales scientifiques de l'École normale supérieure, t. I (1864), Paris, Gauthier-Villars, 1864, 4°.

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Mascart (E.). Paris, Gauthier-Villars, 1866, 4°. Extrait des Annales de l'École normale supérieure, t. IV. Avec un planche.

[A photographic map of the solar spectrum is being prepared by Prof. Rowland, and some parts of it have been distributed, viz: wave-lengths 0.0003675 to 0.0005796.]

Mémoire sur la détermination des longueurs d'onde des raies métalliques.

Thalén (Rob.). Upsal., W. Schultz, 1868, 4°. Mit zwei Tafeln. Extrait des Nova Acta Reg. Soc. Sci. Upsal., Ser. III, Vol. VI.

(Gives the wave-lengths of the bright rays of the metals.)

Le spectre d'absorption de la vapeur d'iode.

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[Thollon's map of the solar spectrum is in Vol. I of the Annales de l'Observatoire de Nice, which is about to appear. Vol. II will contain a smaller map or sheets of the group B.]

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## Ueber die electrische Spectra der Metallen.

Brasack. *Zeitschr. f. d. Gesellsch. f. Naturwiss.*, **9**, 185.

## Dissociation of the metalloid elements.

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Cappel (E.). *Ann. Phys. u. Chem.*, **139**, 631.

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## On the projection of the spectra of the metals.

Cooke (J. P.). *Amer. Jour. Sci.*, (2) **40**, 243.

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Sur l'emploi de la lumière Drummond et sur la projection des raies brillants des flammes colorées par les métaux.

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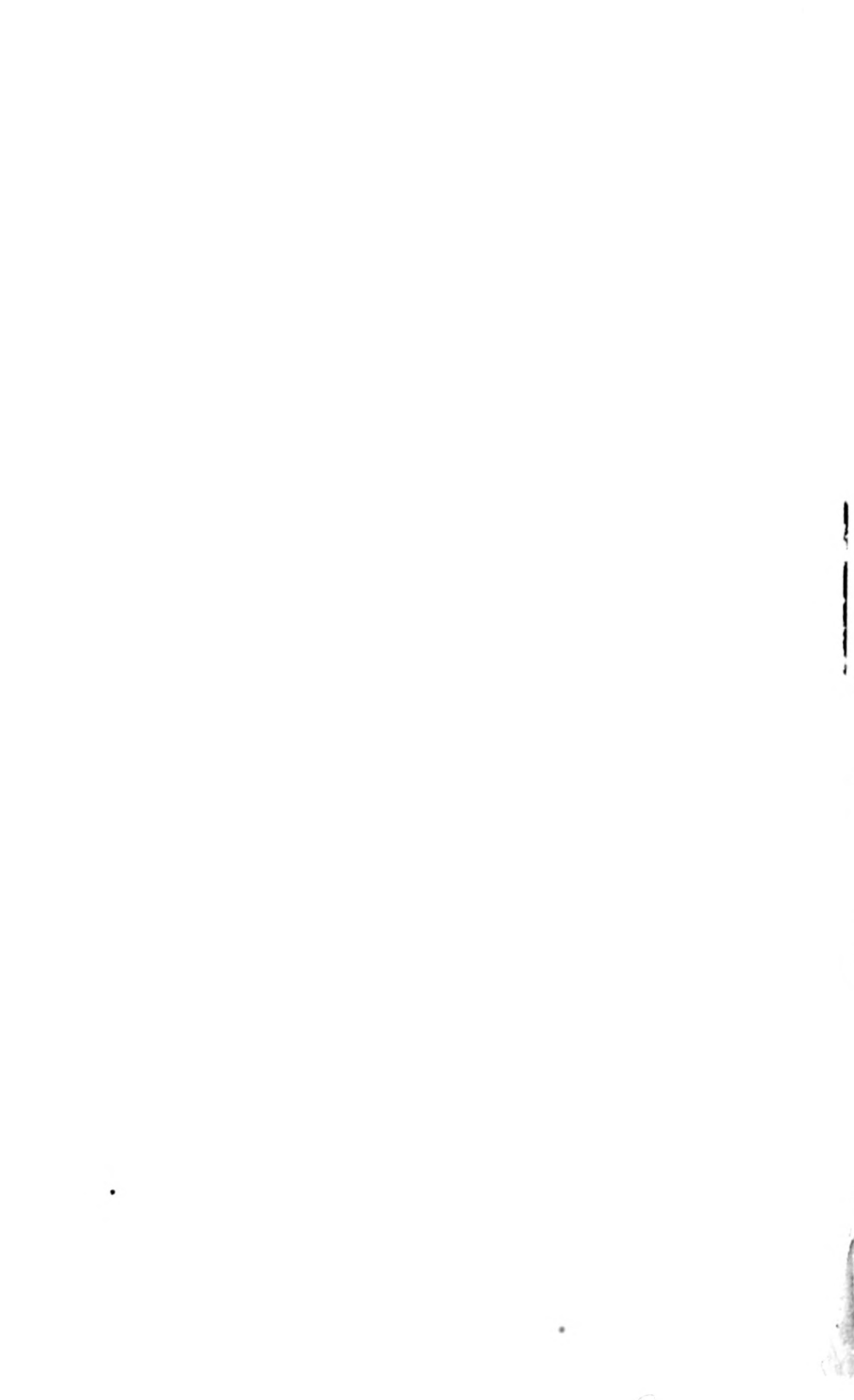
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